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INVALID LIFT

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FIG. 2

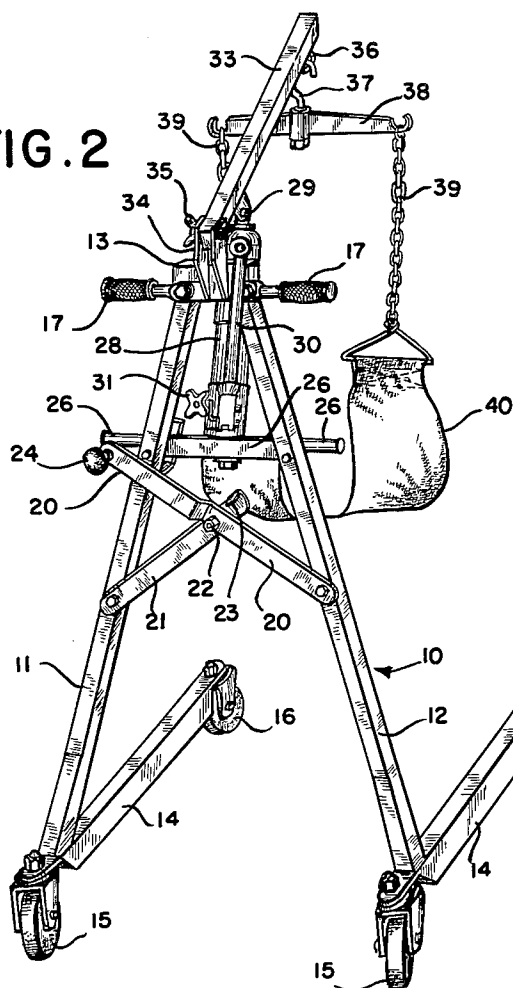
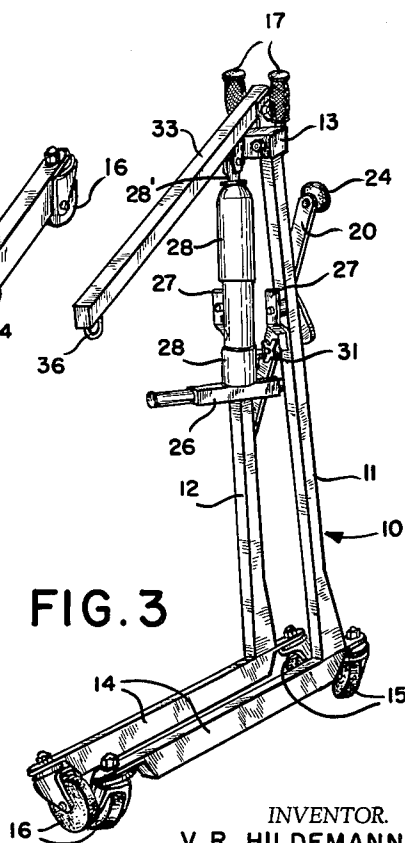


FIG. 3



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INVALID LIFT

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6 Claims. (Cl. 254—8)

This invention relates to improvements in invalid lifts, and more particularly to a novel lift which can be readily carried in a car or other vehicle.

Invalid lifts of the general type herein concerned have great utility and are used extensively for transferring a patient or incapacitated person between a wheel chair and a bed or other article of furniture. Unfortunately, however, conventional lifts are relatively large, bulky contrivances, and when an invalid desires to take a trip it is difficult to transport his lift in an automobile or other vehicle because of its size and unwieldiness. This is especially disconcerting for the numerous incapacitated persons who need not be "shut-ins," and who would be able to enjoy frequent trips except for the difficulty in transporting their lifts. With this in mind, the principal object of the present invention is to provide an improved invalid lift which is not only small and light in weight, as compared with conventional lifts, but which novel structure is adapted to be arranged in a compact form whereby it may be easily picked up and positioned in the rear seat or trunk of an automobile.

A further object of the invention is to provide a novel transportable invalid lift which is relatively small and light, as described, but which is strong and completely dependable and safe in use.

A further object is to provide a novel lift which is so designed that its width can be adjusted while a patient is supported thereby, thus permitting said lift to be temporarily contracted in width by an attendant to facilitate its passage through a narrow doorway or the like.

A further object is to provide a novel lift wherein the operating and control mechanisms are readily accessible and convenient for the attendant.

Still further objects of the invention are to provide an improved invalid lift which is of very simple and relatively inexpensive design, which is rugged and durable, and which is otherwise particularly well suited for its intended purposes.

With the above and other objects in view, which other objects and advantages will become apparent hereinafter, the invention consists of the novel transportable invalid lift and all of its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings, illustrating a preferred embodiment of the invention, and wherein the same reference numerals designate the same parts in all of the views:

FIG. 1 is a perspective view showing the improved lift in its normal, operative condition;

FIG. 2 is a perspective view showing the lift partially contracted in width, as when it is desired to pass through a restricted passageway; and

FIG. 3 is a perspective view of the lift in its fully compacted condition.

As hereinabove described, portable lifts of the general type herein concerned are widely used for transferring invalids or incapacitated persons between a wheel chair and an article of furniture, and such lifts are invaluable for that purpose. Customarily these invalid lifts include a wheeled U-shaped horizontal base, an upright post or mast, a lifting arm pivotally mounted on an upper portion of said mast, and a hydraulic jack or the like is mounted between the mast and the arm for moving the latter up and down. It is necessary, of course, that the space be-

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tween the legs forming the U-shaped base be sufficiently great to permit a wheel chair to enter therebetween, but it is also desirable that said base be adjustable in order that the lift may be partially contracted in width for passage through narrow doorways or aisles. Even in so-called adjustable base lifts, however, the base is U-shaped in design and it is impossible to arrange the base legs close together along their entire lengths to form a really narrow, compact unit, and such conventional lifts cannot be positioned in the back seat of a car or other confined space without disassembling the same.

In accordance with the present invention, and referring now more particularly to the drawings, it will be seen that the present lift is provided with an inverted V-like upright main frame 10 formed of hollow, lightweight stock, and including a pair of normally downwardly-diverging legs 11 and 12 hingedly connected at their upper ends to a short top bar 13. Projecting outwardly from the lower ends of said frame legs are parallel, horizontal base members 14 having swivel wheels or casters 15 and 16 on their inner and outer ends, and pivotally mounted on the upper portion of said frame are a pair of handle bars 17 which normally project laterally outwardly to permit an attendant to conveniently grasp and push or pull the lift.

Due to the pivotal mounting of the frame legs 11 and 12 in the present invention said legs can be arranged in substantially diverging relationship, as illustrated in FIG. 1, and wherein the base members 14 are widely spaced to receive a wheelchair or the like therebetween, or said legs can be drawn together to provide an extremely narrow, compact unit, as shown in FIG. 3.

As best appears in FIGS. 1 and 2, said upright frame 10 is provided with a hinged crossarm intermediate its height comprising an element 20 pivotally connected to the frame leg 12, and an element 21 pivotally connected to the frame leg 11, said arms being pivotally jointed at a point 22 to provide a jackknife-type arm structure. The arm element 21 has a lug 23 (FIG. 2) on its outer end which is designed to abut the upper edge of the element 20 when said arm is in its normal, horizontal position, to maintain the frame legs in the spread condition of FIG. 1, and the arm element 20 is elongated, as shown, and is provided with a handle knob 24 whereby it may be readily grasped and pulled upwardly to jackknife said hinged crossarm, and to thereby draw the frame legs 11 and 12 together. Thus the frame can be partially contracted in width as shown in FIG. 2 for passage through a narrow doorway or the like, or the frame legs can be drawn close together as shown in FIG. 3 to provide a very compact unit which can be easily fitted in the back seat or trunk of a car, or in a small space in an airplane or other conveyance.

Spanning the frame leg members 11 and 12 above the hinged crossarm 20-21 is a jack-supporting bar 26 having cylindrical end portions which are adapted to rotatably and removably seat in upwardly-opening brackets 27 secured to said frame elements, and said brackets are preferably provided with rollers to minimize the friction and wear on said relatively movable members. A hydraulic jack 28 is rotatably mounted on and projects upwardly from said supporting bar, and the upper end of the extendable jack piston 28' is removably pivotally connected as at 29 to the lift arm 33. Said jack assembly includes a removable, reciprocable pump handle 30 whereby said piston can be extended to raise the outer end of the arm 33, and a suitable control knob 31 is provided at the base of the jack cylinder for releasing the hydraulic pressure to permit the controlled descent of said arm, as is well known in the art. Said jack handle 30 is so designed and mounted that it is readily accessible to the attendant in a standing position and, in addition, the jack

may be rotated from the position shown so that said handle projects in the opposite direction, whichever is more convenient for the operator. It is to be understood, of course, that while a hydraulic jack has been shown and described herein, a mechanical jack or any other equivalent mechanism could be substituted therefor.

The lift arm 33 in the present structure has its inner end removably pivotally mounted in a bifurcated bracket 34 on the frame top member 13, there being a pivot bolt therethrough and a removable wing nut 35. Said arm is swingable in a vertical plane about said bracket connection, and is adapted to be moved through the action of the aforementioned hydraulic jack 28. The outer end of said lift arm is provided with a depending hook eye 36 adapted to be removably engaged by a hook 37 swingably mounted on a spreader bar or hanger 38, and the outer ends of the latter are designed to detachably receive the upper ends of chains 39 or other flexible suspension means by which an invalid-supporting saddle 40 and back 41 may be suspended. It is also possible, of course, to use under shoulder and leg straps in lieu of the illustrated invalid-supporting elements, and the hanger 38 could be dispensed with and the supporting elements suspended directly from the hooked outer end of the lift arm.

In the use of the lift comprising the present invention, as when it is desired to transfer a patient from a chair or bed to a wheelchair, the outer end of the arm 33 is lowered and the frame legs 11 and 12 are arranged in their widespread condition, with the base members 14 positioned under the bed or in straddling relation to the sides of the chair or other article of furniture. The supporting elements 40 and 41 are then positioned beneath the person to be lifted, and the jack handle 30 is reciprocated by the attendant to swing the arm 33 upwardly about its pivot point 34. Thus the invalid is elevated from the bed or the like, and the entire lift structure may be wheeled to a position where the invalid is supported directly over the wheelchair or other furniture article, and the hydraulic fluid control knob 31 is manipulated to slowly lower the person into place thereon.

One of the advantageous features of the present invention, as hereinabove mentioned, is the facility with which the width of the base can be contracted to permit the passage of the lift through a narrow doorway or hall. To temporarily reduce the width of the lift it is merely necessary for the attendant to pull upwardly on the cross-arm knob 24 to draw the diverging frame members 11 and 12 closer together, as described, which can be easily accomplished by the attendant with one hand while he simultaneously pushes or pulls the lift through the restricted passageway with his other hand.

The principal object of the invention, of course, is to provide a novel invalid lift which is adapted to be arranged in a narrow, compact form whereby it can be easily manually picked up and deposited in an automobile or the like, and which does not require the complete disassembly of the structure. To compact the present lift it is merely necessary for the attendant to lift the jack-supporting bar 26 from its supporting brackets 27, and to pull upwardly on the crossarm 20 to draw the frame elements 11 and 12 and the integral base members 14 closely together, as shown in FIG. 3. The jack 28 may then be rotated so that its supporting bar 26 is in longitudinal alignment with the base members 14, and the handle bars 17 are pivoted upwardly to a non-projecting position. With the lift thus compacted it may be easily manually picked up by the attendant and readily fitted in the rear seat or trunk of a car. When the invalid reaches his destination the lift is removed from the car and can be readily arranged in an operative condition merely by remounting the jack-supporting bar 26 in its supporting brackets and spreading the frame legs 11 and 12. The lift is then ready for use.

In the event it is desired to store the lift away in a small closet or other confined space, the structure can be

disassembled by manually unscrewing the wing nut 35 and removing the elongated arm 33 from the frame bracket 34, and the jack assembly can be separated from said arm by unscrewing the connecting bolt 29. Thus the lift can be broken down into several relatively small, easily-stored components, and the reassembly of the same can be accomplished quickly and without requiring any special tools or equipment.

From the foregoing detailed description it will be seen that the present invention provides a novel invalid lift which is a definite improvement in the art. Unlike conventional lifts, the present unit is relatively small and lightweight, and it can be readily arranged in a very compact and narrow condition wherein it will easily fit in the back seat or trunk of an automobile or other vehicle, thus permitting an incapacitated person to conveniently take his lift along with him when he travels. Other advantages of the present structure, as hereinabove mentioned, are that an attendant can easily temporarily reduce the width of the same for passage through a narrow opening, and the lift can be completely disassembled for storage in a small closet or other confined space. Moreover, the present structure is so designed that although it is light and easy to handle, it is rugged and completely safe and reliable in use.

It is to be understood that the invention is not to be limited or confined to a structure identical in all respects to the assemblage illustrated and hereinabove described. It is contemplated that numerous changes or modifications could be made in the structure without departing from the spirit of the invention, and it is intended to include herein not only the embodiment shown but also any and all modifications or variations thereof as may come within the scope of the following claims.

What I claim is:

1. A transportable invalid lift, comprising: an upright frame formed of a pair of legs pivotally associated at their upper ends, said frame legs being swingable from a position wherein they are drawn together in closely adjacent relationship to a diverging position wherein their lower ends are widely spaced; a pair of wheeled base members on and projecting outwardly from the lower ends of said frame legs; a hinged crossarm on and extending between said frame legs, said hinged crossarm being manually pivotal from a straight horizontal position wherein said frame legs are maintained in a diverging relationship to a jackknifed condition wherein said frame leg and base members are drawn together; a lift arm vertically-pivotally mounted on and projecting outwardly from the top of said frame, the outer end of said arm being adapted to have invalid-supporting elements removably secured thereto; a jack-supporting bar removably revolvably supported by and between said frame legs; a jack rotatably mounted on said bar and having an extendable piston detachably secured to said lift arm intermediate its length, said jack being adapted to raise the outer end of said arm; and operating means on said jack.

2. A transportable invalid lift, comprising: an upright frame formed of a pair of hollow legs pivotally associated at their upper ends, said frame legs being swingable from a position wherein they are drawn together in parallel, closely adjacent relationship to a diverging position wherein their lower ends are widely spaced; a pair of horizontal base members on and projecting outwardly from the lower ends of said frame legs, said base members being parallel to each other and having swivel supporting wheels thereon; a hinged, jackknife-type crossarm on and extending between said frame legs intermediate their heights, said hinged crossarm being manually pivotal from a straight horizontal position wherein said frame legs are maintained in a diverging relationship to a jackknifed condition wherein said frame leg and base members are drawn together; a lift arm removably and vertically-pivotally mounted on and projecting outwardly from the top of said frame, the outer end of said arm

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being adapted to have invalid-supporting elements removably secured thereto; a pair of brackets on said frame legs; a jack-supporting bar removably revolubly supported by and between said frame brackets; a jack rotatably mounted on said bar and having an extendable piston detachably secured to said lift arm intermediate its length, said jack being adapted to raise the outer end of said pivotal arm; an operating handle on and projecting from said jack; and means on said jack permitting the controlled descent of said lift arm outer end.

3. An invalid lift as recited in claim 2 wherein said hinged crossarm has means thereon permitting an operator to manually maintain the same in a semi-jackknifed condition, with the frame legs drawn partially together, while wheeling the lift through a restricted opening.

4. An invalid lift as recited in claim 2 wherein said jack can be rotated to cause said operating handle to project in any desired direction.

5. An invalid lift as recited in claim 2 wherein said jack-supporting bar can be rotated to a non-projecting

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position in longitudinal alignment with said base members when the lift is not in use.

6. An invalid lift as recited in claim 2 wherein said frame is provided with laterally-projecting handle bars which are pivotal to a non-projecting position against said frame when the lift is not in use.

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