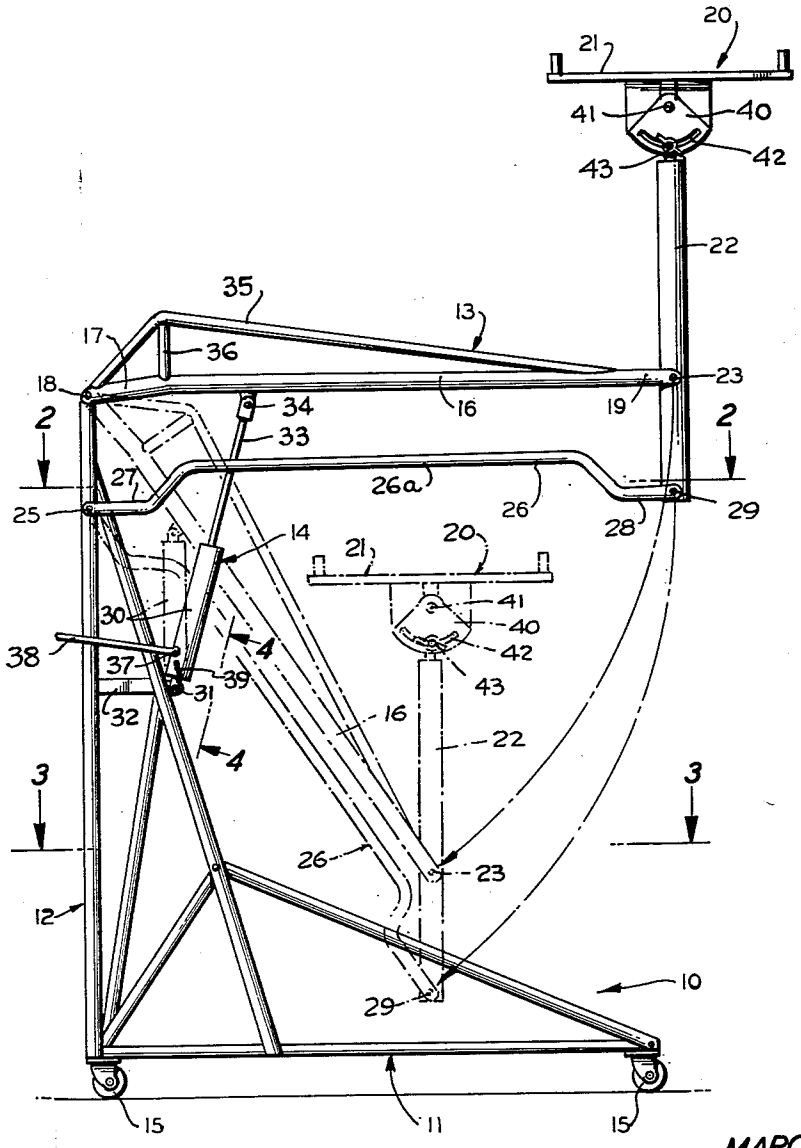
Nov. 19, 1963 M. D. BENSON 3,111,232

JACK FOR LIGHT FIXTURES

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FIG_1



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FIG_2

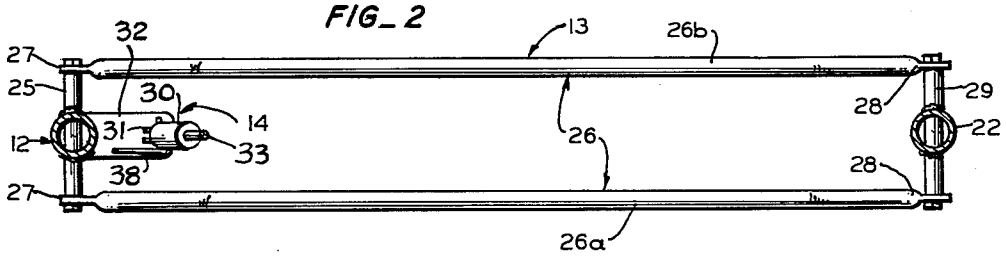
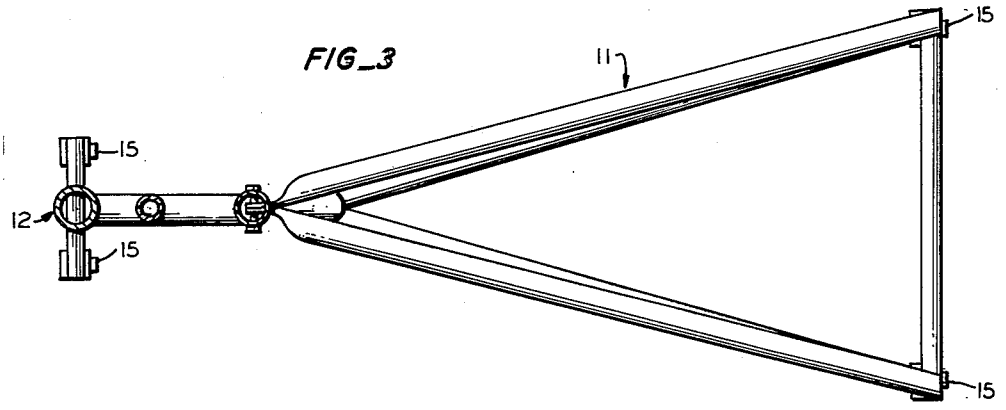


FIG_3



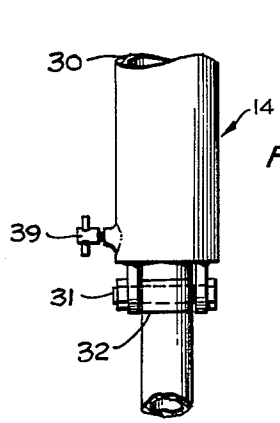


FIG_4

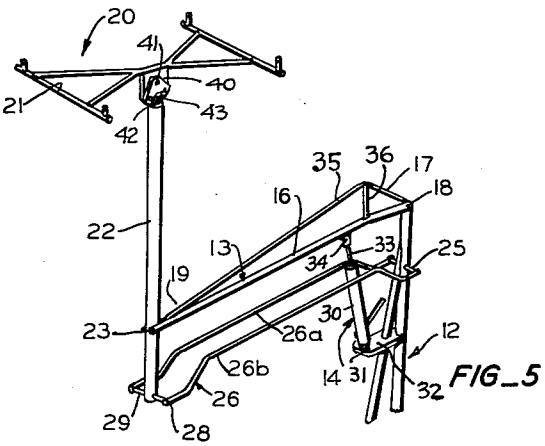


FIG_5

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3,111,232

JACK FOR LIGHT FIXTURES

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2 Claims. (Cl. 214—1)

This invention relates to portable lift jacks and more particularly to certain novel improvements therein for maintaining the object lifted horizontally during elevation thereof.

This invention is particularly directed to an articulatable platform or the like mounted on a movable carriage for lifting panel like articles such as sheet rock, panel type light fixtures and the like up against the ceiling incident to being secured thereto and/or installed thereagainst.

There are numerous types of devices of this character including dollied carriages having article supporting arms pivotally mounted thereon for up and down swinging movement by means of a jack but to my knowledge none facilitates automatic maintenance of the load in horizontal position in the simple yet effective manner contemplated by this invention. To this end the present invention provides an articulatable lift frame of dual arms pivotally mounted one above the other on a standard to provide a parallelogram truss jointed such as to raise and lower its vertically disposed free end in true vertical disposition irrespective of the elevation at which it is supported.

These and other objects and advantages of the present invention will become apparent from a reading of the following description in the light of the drawings in which:

FIG. 1 is a side elevation of a jack lift embodying the present invention.

FIG. 2 is a horizontal section taken along line 2—2 in FIG. 1.

FIG. 3 is a horizontal section taken along line 3—3 in FIG. 1.

FIG. 4 is a fragmentary section taken along line 4—4 in FIG. 1.

FIG. 5 is a fragmentary perspective view of the upper portion of FIG. 1.

Referring to FIGS. 1 and 3 the lift 10 generally comprises a base 11 in the form of a dollied carriage having a standard or post 12 extending vertically upright from one end thereof and having a truss-like frame 13 pivotally mounted on its upper end for articulation by jack 14 between the post 12 and the frame 13.

The dollied carriage base 11 is triangular in shape having the standard 12 secured to its apex so as to extend perpendicularly upward from the apex of the foot-like base which is horizontally disposed. The base 11 has caster wheels 15 at each of its angle corners so as to provide a three point support to stabilize the load on the frame 13 which is above.

The frame 13 is pivoted to the post 12 so as to extend over the triangular base 11, the latter being spread at its outer end so as to achieve stability of the lift jack in a manner well known in the art.

The invention herein resides in the articulatable truss-like frame 13 in combination with an article supporting unit thereon as will now be explained.

The truss-like frame 13 includes a single boom arm 16 having one end 17 pivotally mounted as at 18 on the upper end of the standard or single post 12. As best seen in FIGS. 1 and 5 the jack 14 is disposed in a plane common to and between the post 12 and the boom arm 16 in such a manner as to effect up and down swinging movement of the latter. The outer end 19 of the boom arm 16 carries an article support 20 by which to raise and lower an article in uniform, i.e. horizontal, disposition irrespective of the up and/or down position of the articulatable boom arm 16.

The article support 20 consists of a basket or tray-like framework 21 secured to the upper end of a single central leg 22 which is pivotally connected as at 23 to the outer end 19 of the boom arm 16 so as to be disposed in the same plane as the latter and the single post 12 and overlying the triangular base in a plane vertically above the altitudinal axis thereof.

Means for stabilizing the single legged basket or tray-like article support consists of an auxiliary arm 26 comparable in length to the boom arm 16. The auxiliary arm 26 consists of two parallel rods or tubular members 26*a* and 26*b* spaced on either side of the plane of swing of the boom arm 16 so as to straddle the jack 14 and to lend lateral support to the load as will become apparent. Both rods 26*a* and *b* have their ends 27 pivotally connected to a cross bar 25 secured to the standard 12 a predetermined distance beneath the pivot connection 18 for the boom arm 16, the arms 26*a* and *b* having their opposite ends 28 pivotally connected to a cross bar 29 secured to the leg 22 a comparable distance beneath the pivot connection 23 at the free end 19 of the boom arm 16. This constitutes the articulatable framework 13 hereinbefore mentioned. In this manner the two arms 16 and 26 both swing from fixed spaced pivot points 23 and 27, respectively, at the stationary standard 12 and have their outer ends 19 and 28 maintained in spaced relation by their pivotal connection 23 and 29, respectively, to the single leg member 22 so that the two arms 16 and 26 always remain parallel to each other and thus maintain the leg member 22 in vertical disposition irrespective of the up and/or down position of the boom arm 16. In other words, the boom arm 16 and auxiliary arm and their respective relations to the standard 12 and leg 22 consist of a parallelogram at all times so that the leg member 22 remains vertically disposed during articulation of the boom arm relative to the fixed standard 12. In addition to the foregoing the spaced auxiliary arms 26*a* and *b* tend to overcome lateral tilting or torque to the parallelogram frame 13 in the event the load on the basket 21 is slightly out of center.

From the foregoing it will be appreciated that the basket framework 21 which is fixed perpendicular to the single leg 22 is also maintained in a horizontal plane irrespective of the up and/or down disposition of the articulatable framework 13 of the present invention.

In connection with the foregoing it will be noted that the jack 14 in the present arrangement is of the hydraulic type although it could well be a jack screw or any other form of means for raising and/or lowering the articulatable framework 13. The jack 14 as represented in the drawings is a conventional hydraulic ram with a cylinder 30 having its lower end pivotally secured as at 31 to a shelf 32 mounted on the standard 12 beneath the articulatable framework 13. A piston (not shown) within the cylinder 30 is connected to a rod 33 having its upper end pivotally connected as at 34 to an ear welded to the bottom of the boom arm 16 a short distance out from its pivot mount on the standard 12.

This puts a direct thrust against the boom arm 16 at the pivot connection 34 especially when a load is borne by the basket 21. For this reason the boom arm 16 is trussed by an overlying tie bar 35 and strut 36 to counteract the bending moment on the boom arm during operation. The tie bar 35 is connected at its ends to the ends of the boom arm 16 while the strut 36 is disposed between the boom arm and tie bar at a critical point of thrust from the jack 14 against the underside of the boom arm.

Means for actuating the jack 14 constitutes a pump 37 having a lever 38 for hand control to thereby raise the

rod 33 and articulatable framework 13. A relief valve 39 on the cylinder 30 when opened facilitates controlled lowering of the rod 33 and framework 13. In this manner the tray-like basket 21 at the outer end of the articulatable framework 13 is raised and/or lowered.

As best seen in FIG. 1 the tray-like basket 21 is adjustable relative to the leg member 22 by means of a plate 40 suspended from the basket 21 having pivot connection as at 41 with the upper end of the leg 22, the plate 40 having an arcuate slot 42 struct on a radius from the pivot 41 and through which a wing bolt 43 extends for threaded connection to the leg 22 for securing the plate 40 and basket 21 in a fixed position relative to the leg 22.

In operation the articulatable frame 13 is disposed in lowered position (dot-dash lines FIG. 1) to receive the object to be raised, usually a lighting fixture or the like. The fixture is placed upon the tray-like basket 21 in such a manner that the center of gravity of the fixture is substantially aligned with the leg member 22. Next the handle or lever 38 is manipulated to operate the pump 37 to thereby cause the ram rod 33 to be extended from the cylinder 30. This causes the parallelogram frame 13 to swing upwardly about the fixed dual pivots 18 and 25 whereupon the leg 22 and tray 21 supported thereon are elevated through an arcuate path *p* (FIG. 1). Throughout the entire operation the leg remains vertical and the tray horizontal to present the fixture flush against a ceiling or other structural member to which it is to be secured. Of course, if the fixture is to be mounted on a slanted surface, i.e. one which is angularly disposed, the tray must first be adjusted by loosening wing belt 43 and tilting the tray 21 into a position parallel to such slanted surface.

The entire unit 10 being rollable on the caster wheels 15, the fixture can be maneuvered thereby into the exact position desired and thus supported until bolts or screws and the like have been applied to secure the fixture to the surface intended. Thereafter, the lift unit may be rolled away or the relief valve 39 opened to allow the articulatable frame 13 to be lowered away from the fixture.

While I have described my improved lift in specific detail it will be appreciated that it may be susceptible to variations, alterations and/or modifications without departing from the spirit of my invention. I therefore desire to avail myself of all variations, alterations and/or modifications as fairly come within the purview of the appended claims.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is defined in the following claims:

I claim:

1. In a lift jack of the type including a vertical standard on a rollable base and an article supporting tray movable by a jack for raising and lowering panel-like articles

in parallel relation to a surface to which they are to be secured; a triangular shaped base having a single post extending upwardly from its apex end, a single boom arm having one end thereof pivotally mounted to the upper end of said single post, a single central leg extending downwardly from said article supporting tray and pivotally connected to the opposite end of said boom arm for up and down movement therewith in a vertical plane vertically above the altitudinal axis of said triangular base, said jack being co-planar of said vertical plane and having pivotal connection with said boom arm, and a pair of stabilizing arms straddling said vertical plane, a cross bar secured to the lower end of said single leg transverse to said plane and pivotally connected to the respective ends of said pair of stabilizing arms, and a second cross bar secured to said single post a distance from the boom arm equal to that of said first named cross bar and transverse to said plane and having pivotal connection to the respective opposite ends of said pair of stabilizing arms.

2. In a lift jack of the type including a vertical standard on a rollable base and an article supporting tray movable by a jack for raising and lowering panel-like articles in parallel relation to a surface to which they are to be secured; a triangular shaped base having a single post extending upwardly from its apex end, a single boom arm having one end thereof pivotally mounted to the upper end of said single post, a single central leg extending downwardly from said article supporting tray and pivotally connected to the opposite end of said boom arm for up and down movement therewith in a vertical plane vertically above the altitudinal axis of said triangular base, said jack being co-planar of said vertical plane and having pivotal connection with said boom arm, and a pair of stabilizing arms straddling said vertical plane, a cross bar secured to the lower end of said single leg transverse to said plane and pivotally connected to the respective ends of said pair of stabilizing arms, and a second cross bar secured to said single post a distance from the boom arm equal to that of said first named cross bar and transverse to said plane and having pivotal connection to the respective opposite ends of said pair of stabilizing arms, means for pivotally mounting said article supporting tray to the upper end of said single leg and means between said tray and single leg for securing them at selected angular dispositions relative to each other.

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