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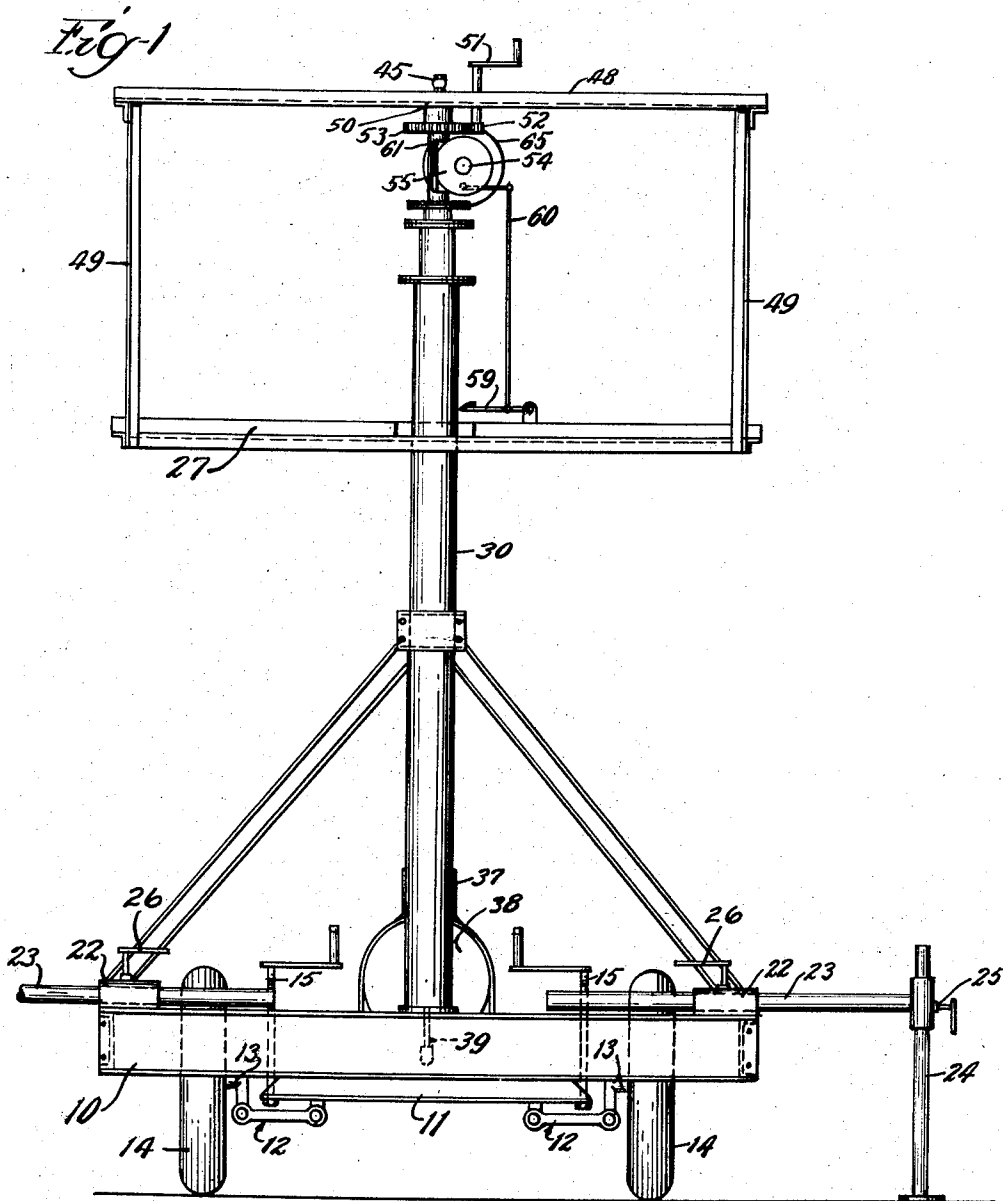
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PLATFORM LIFT FOR MAN AND MATERIALS

Filed March 26, 1954

2 Sheets-Sheet 1



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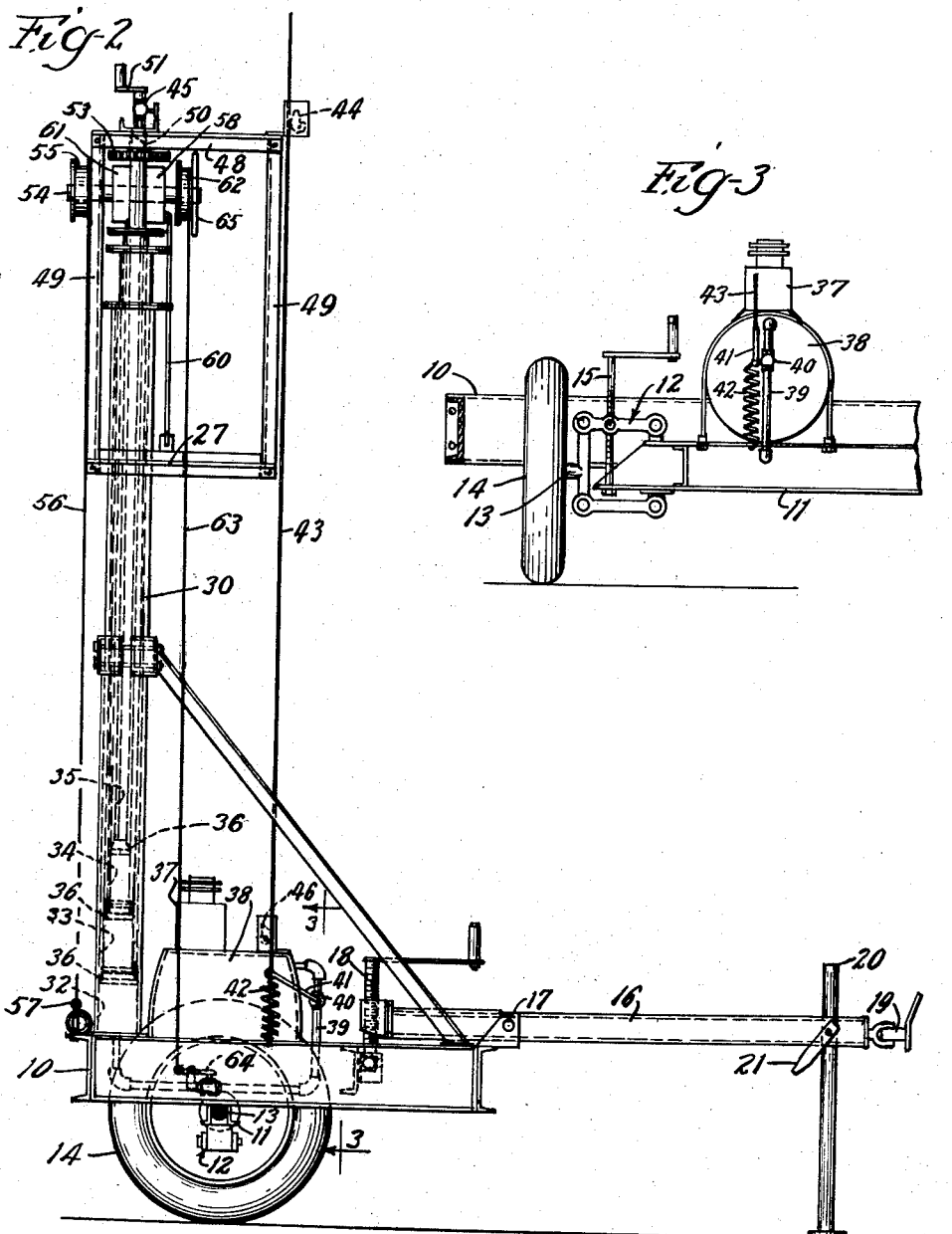
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PLATFORM LIFT FOR MAN AND MATERIALS

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2 Claims. (Cl. 304—9)

This invention relates to a platform lift for workmen and materials to be used in painting, construction, fruit picking, fire fighting, rescuing, etc.

The principal object of the invention is to provide a portable work platform that can be readily placed adjacent to work to be done, levelled, raised and lowered to suit the needs of one or more workmen.

Generally speaking, this is accomplished by providing a wheeled frame with towing and elevating means, an extensible and contractible elevator for a platform, and equipped with power means for operating the elevator and manual means for controlling it.

Other objects and advantages will be apparent as the description is read in connection with the accompanying drawings, in which:

Figure 1 is a front elevation of the device;

Figure 2 is a side elevation; and

Figure 3 is a section on the line 3—3 of Figure 2.

But these diagrammatic drawings and the corresponding description are used for the purpose of illustrative disclosure only, and are not intended to impose unnecessary limitations on the claims.

The base of the device is the main frame 10, generally rectangular in form of commercial shapes fabricated in any desirable manner. Projecting beneath the main frame is a sub-frame or axle frame 11, also fabricated from commercial shapes and terminating (Fig. 3) in parallel link motions generally indicated by 12 having stub shafts 13 for supporting wheels 14. A threaded crank 15 is associated with each parallel link motion for adjusting the wheels to level the frame laterally.

A tongue 16 is pivoted to the main frame at 17 and associated with a threaded crank 18 by which it may be adjusted to level the frame lengthwise.

The tongue is equipped with a suitable coupler 19 by which it is attached to a tractor or other towing device.

When the towing vehicle is to be removed, the tongue is provided with an adjustable post 20 and a clamp 21 by which it becomes a sort of outrigger for adjusting and holding the frame in proper position.

The main frame is also provided with a lateral outrigger at each side including a tubular bearing 22 fixed to the main frame adjacent to the front corner, a telescoping pole 23, an upright support 24, and a clamp 25, the adjustment of the pole being set by a clamp 26.

The outriggers and uprights are readily collapsed or removed and stored for travel.

A great variety of known means are suitable for extensible and contractible elevators and supports for a work platform 27, among which may be mentioned hydraulic, pneumatic, screw-threaded, levers, lazy tongs, etc. From these, a pneumatic, multiple telescoping mast 30 has been chosen because it serves at once as a pedestal, an elevator, and a fluid motor for raising the platform. As here shown, it is mounted at the front edge of the main frame 10 and consists of a main cylinder 32 (braced both ways) and three auxiliary cylinders 33, 34, and

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35 telescoped together, interlocked by keys, and fitted with suitable cup leathers 36 or other packing.

An air compressor 37, driven by electric, internal combustion, fluid or other motors, supplies a relatively large storage tank 38 with compressed air, and the tank is connected by piping 39 with the base of the telescoping mast 30, as appears most clearly in Fig. 2.

The compressed air is controlled by a spring closed valve 40 equipped with a lever or handle 41, and a tension spring 42, connected with the free end of the handle, is strong enough to pull the valve open when allowed to do so.

A flexible connector including a rope 43 extends from a rope grip or other fastening device 44 to the end of the handle 41, and provides means for closing the valve 40 against the resistance of the spring 42 and stopping the flow of air to the mast 30 when the desired height is reached. A release valve 45 at the top of the mast and convenient to a workman on the platform 27 is provided for enabling him to lower the platform to adjust it or to bring it to its lowermost position by permitting the air to escape.

A toggle or other automatic rope grip 46 is provided for holding the valve 40 closed during lowering or adjusting.

The operation would seem to be obvious from the foregoing description, except that the toggle or other fastening 44 will hold the connector 43 in position to keep the valve 40 closed unless and until leakage permits the platform to ease down when the spring 42 will gradually open the valve 41 and restore the leakage, thus maintaining the platform at a selected level.

The platform 27 may be of any suitable construction for the work to be done, but it is preferably provided with a surrounding rail 48, which is here shown as part of a framework including the actual platform and uprights 49, making a sort of working cage swiveled at 50 on top of the innermost cylinder 35.

A hand crank 51 journaled on the rail 48 drives a worm wheel 52 meshed with a worm gear 53 fixed on the mast to rotate the platform and hold it in position.

An alternative control mechanism includes a control shaft 54 having a drum 55 at one end for a cable 56 extended downwardly and made fast to the main frame 10 at 57.

A brake 58 normally holds the control shaft against rotation until released by a pedal 59 and a link 60 to permit the platform to move.

A spring 61 winds up the shaft and is only strong enough to drive it when the platform is being lowered by releasing the air.

Another drum 62 near the right end of the control shaft in Fig. 2 is for a valve cable 63 for another control valve 64 on the piping 39. This drum is secured to the control shaft by light friction.

Next to the drum 62 is a hand wheel 65 by which the drum may be rotated in either direction on the shaft 54. Rotated one way, it will open the valve 64 and admit air to raise the platform. Rotated the other way, it will close the valve and leave the platform in position until lowered by opening the release valve 45. In considering one of the controls, the other may be assumed to be absent or inoperative.

An important feature of the invention is the relation of the trailer structure on which the platform lift is mounted, comprising main frame 10 and tongue 16, and the towing vehicle to which the tongue 16 is coupled. Referring to Figure 2, it will be noted that the platform 27 and mast 30 upon which said platform is mounted, are positioned closely adjacent the end of the main frame 10, a necessary arrangement since, when used, for instance, in painting a house or the like, the platform 27

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is desirably positioned as close to the surface being painted as possible so as to place the workman within easy reach thereof. The weight of platform 27 and mast 30 acting on the end of main frame 10 creates an unbalancing moment on frame 10 which tends to pivot said frame counter-clockwise (as viewed in Figure 2) about stub shafts 13, throwing the tongue 16 upwardly and towards the left of Figure 2 and platform 27 downwardly in the same direction.

It is therefore important that the vehicle frame upon which platform 27 and mast 30 are mounted be of the trailer-type, since the weight of the towing device of apparatus, such as a tractor, truck or even a conventional automobile, effectively offsets the unbalancing forces acting on frame 10. Moreover, by adjusting the post 20 downwardly with respect to tongue 16 to lift the tongue upwardly, thereby taking a large portion of the weight of the towing vehicle off of its springs, back and forth movement of the platform 27, even when loaded, is effectively prevented. After so positioned the tongue 16 with respect to the towing vehicle, the frame 10 may be leveled lengthwise by operating threaded crank 18, which pivots the frame 10 with respect to the tongue 16 about pivotal connection 17.

I claim:

1. A portable work platform apparatus comprising a two wheeled trailer frame including a front end and a rear end, a platform secured to said frame closely adjacent said rear end thereof, power means disposed between said platform and said frame at said rear end of said frame for elevating and lowering said platform, said wheels being rotatably secured to said frame between said power means and said front end of said frame, whereby the weight of said platform and said power means applies an unbalanced moment to said frame tending to lift the front end thereof upwardly about said wheels as a center, a draft member pivotally connected intermediate the ends thereof to the front end of said frame, coupling means secured to the front end of said draft member for attachment to a towing vehicle, a vertically adjustable ground engaging support carried by said draft member adjacent said coupling means, and jack means interposed between the rear end of said draft member and said frame, said jack means being secured to said frame between said front end thereof and said wheels, whereby, when said coupling means is attached to a towing vehicle, and said platform is positioned for use, said ground engaging support may be adjusted vertically to raise the front end of

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said draft member and apply an increased amount of the towing vehicle's weight to said draft member to offset said unbalanced moment, and said jack means may be actuated to force the front end of said frame about said wheels as a center to level said trailer frame and said platform.

2. A portable work platform apparatus comprising, in combination, a two wheeled trailer frame including a front end and a rear end, a platform secured to said frame closely adjacent said rear end thereof, power means disposed between said platform and said frame at said rear end of said frame for elevating and lowering said platform, the wheels of said frame being rotatably secured to said frame between said power means and said front end of said frame, whereby the weight of said platform and said power means applies an unbalancing moment to said frame tending to lift the front end thereof upwardly about said wheels as a center, a draft member pivotally connected intermediate the ends thereof to the rear end of said frame, a towing vehicle coupled to the front end of said draft member, a vertically adjustable ground engaging support carried by said draft member adjacent said towing vehicle, and jack means interposed between the rear end of said draft member and said frame, said jack means being secured to said frame between said front end thereof and said wheels, whereby, when said platform is positioned for use, said ground engaging support may be adjusted vertically to raise the front end of said draft member and apply an increased amount of the towing vehicle's weight to said draft member to offset said unbalanced moment, and said jack means may be actuated to force the front end of said frame about said wheels as a center to level said trailer frame and said platform.

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