Nov. 1, 1966 J. J. PFEIFFER ETAL 3,282,377

ELEVATED WORK-SUPPORTING PLATFORM

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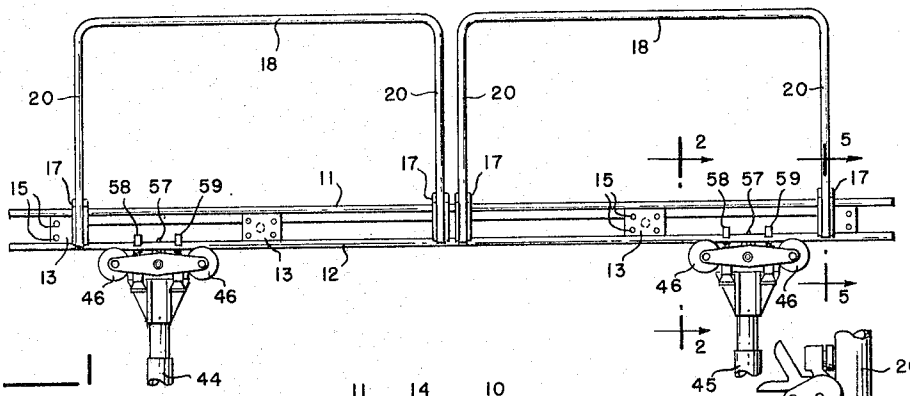


FIG. 1

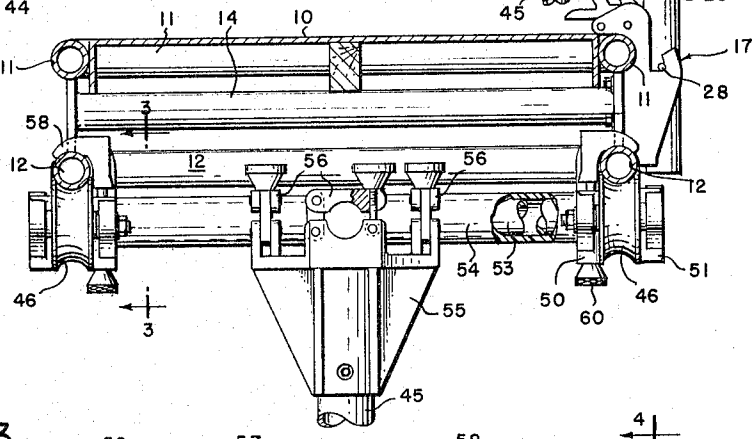


FIG. 2

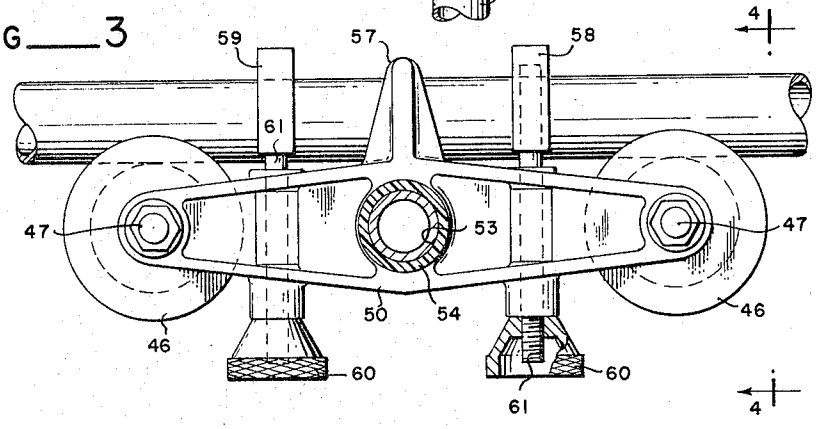


FIG. 3

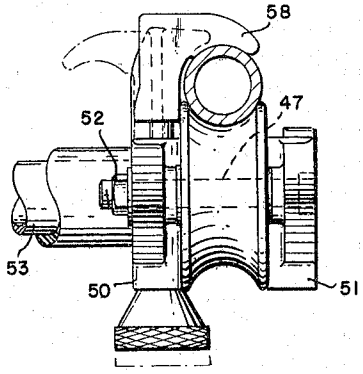


FIG. 4

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FIG. 7

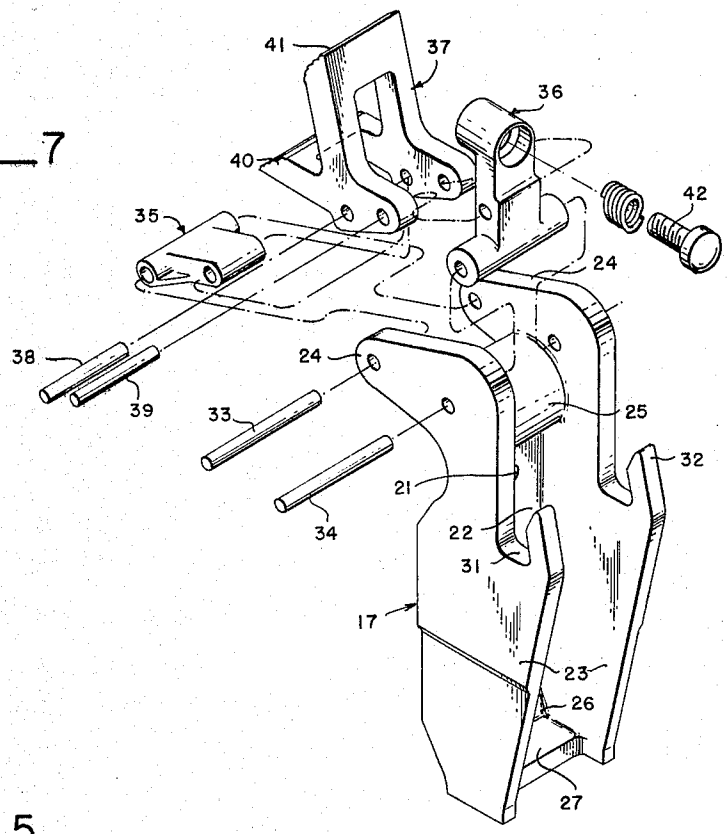


FIG. 5

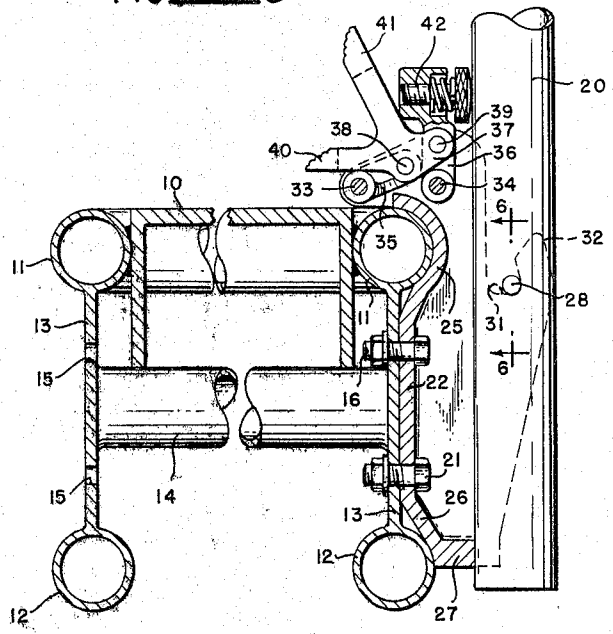
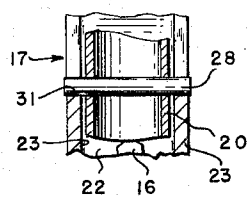


FIG. 6



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United States Patent Office

3,282,377

Patented Nov. 1, 1966

3,282,377

ELEVATED WORK-SUPPORTING PLATFORM

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Filed Mar. 12, 1965, Ser. No. 439,218
15 Claims. (Cl. 182—36)

This invention relates to elevated work-supporting platforms, and as one of its objects aims to provide a platform of unusually strong and durable construction which can be easily and quickly attached to or detached from an upright support.

It is a further and important object to provide a platform of this nature having its two ends each supported by a vertically disposed hydraulic hoist, and between said hoists and the platform providing interconnections characterized in that the hoists admit of being operated independently with no liability of binding should the speed or the degree of movement of one end of the platform be at variance from the speed or the degree of movement of the other end.

As a still further and particular object the invention aims to provide a platform equipped with guard rails, and having means for attaching said rails firmly to the platform or detaching same from the platform with unusual ease and expedition.

These and yet additional objects and advantages will appear and be understood in the course of the following description and claims, the invention consisting in the novel construction and in the adptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

FIGURE 1 is a fragmentary side elevational view illustrating an elevated work-supporting platform constructed to embody the preferred teachings of the present invention.

FIG. 2 is a fragmentary transverse vertical sectional view drawn to an enlarged scale on line 2—2 of FIG. 1.

FIG. 3 is a fragmentary longitudinal vertical sectional view drawn to a yet larger scale on line 3—3 of FIG. 2.

FIG. 4 is a fragmentary transverse vertical sectional view on line 4—4 of FIG. 3.

FIG. 5 is an enlarged-scale fragmentary transverse vertical sectional view on line 5—5 of FIG. 1.

FIG. 6 is a fragmentary longitudinal vertical sectional view on line 6—6 of FIG. 5; and

FIG. 7 is a perspective exploded view of the rail-attaching bracket detailed in FIG. 5.

Referring to said drawings, the numeral 10 denotes the deck for an elevated work-supporting platform. A framework for the platform comprises a pair of vertically spaced bars 11–12 extending the length of the platform along each of the two sides and having webs 13 connecting the two bars of each pair at spaced intervals of the length. Cross-bars 14 connect the webs at one side with the webs at the other side. The bars are desirably comprised of aluminum tubing, and the deck, which occupies the same level as the upper bars 11 and spans the opening therebetween, is or may comprise a plank of expanded aluminum. Side edges of the deck are joined to the upper bars 11 by welding, as are the webs to the bars 11–12, and the cross-bars 14 to the webs.

The webs have a rectangular shape when viewed from the side of the platform and have a pair of vertically spaced drill-holes 15 adjacent each side edge. Bolts 16 fit the drill-holes and permit brackets 17 to be secured to the framework along either or both sides at separated selectively variable intervals of the length. The brackets serve as mountings for guard rails 18. More properly stated, they serve as mountings for vertical posts 20 which

are integral with the rails and extend downwardly from each of the two ends thereof. Two brackets located side-by-side can be accommodated by each web 13, thus to permit end posts of two adjacent guard rails to be attached to a single web so that there is no more than a narrow gap between the posts and, to all practical purposes, provides the functioning equivalent of a continuous guard rail.

Drill-holes 21 which register with the drill-holes 15 are provided in a back wall 22 of the bracket which extends as a webbing between separated vertical cheek sections 23. Other than for horns 24 which extend rearwardly from each cheek section in a position overhanging the related upper bar 11 of the framework, the back wall 22 and the two cheek sections 23 have a matching rear-edge profile. This includes a flat part at the center which overlies the web, a half-rounded part 25 at the top which fits over bar 11, and a heel part 26 at the bottom which bears against the bar 12. A toe-forming flange 27 extends outwardly from the back wall at the bottom extremity thereof.

The two cheeks of the bracket define a stall for the lower end portion of a post 20. The cheeks are notched at or about their mid-height to provide upwardly facing pockets 31 with hooking fingers 32 at the outside thereof. The post has a rigid pin 28 extending diametrically through the same, and protruding ends of this pin lodge in the pockets. The extreme lower end of the post shoulders against the flange 27.

Pins 33 and 34 traverse the horns of the bracket, the former at the free end and the latter at the root end of the horns. A plain lever 35 and a first-order lever 36 are fulcrumed in the space between the horns, the former for swing movement about the pin 33 and the latter for swing movement about the pin 34. Such plain lever is compounded with a second-order lever 37 to produce the two links of a toggle-joint lever, the pivot connection between said links comprising a pin 38. A pivot pin 39 connects the levered end of said toggle joint with said first-order lever 36. Two operating arms 40 and 41 are provided on the lever 37, each being a foot-operated treadle. The former serves to load and the latter to unload the toggle-joint lever, which has an over-center travel for locking the same in a load-exerting position. This load, passed into the first-order lever 36, presses the head of a screw 42 against the post 20 so that the bottom end of such post, rocking about the pin 28, shoulders hard against the flange 27. Screw 42, for adjustment purposes, has its head knurled and threads into a socket provided upon the levered end of said lever 36. Free ends of the two levers 35 and 36 have a reduced width by comparison with that of the fulcrumed hubs. These free ends are straddled by the lever 37, which is made furcate.

Support for each end of the platform is obtained from a respective one of two hydraulic hoists 44 and 45. The hoists are individually controlled so that either end of the platform may be raised or lowered independently. The two hoists are supported so as to be parallel, one with the other, and vertical. Hoists suitable for the purpose are illustrated and described in application for Letters Patent of the United States filed on or about January 11, 1965 by ourselves and Joseph J. Pfeiffer.

For the attachment of the platform to each of the two hoists there is provided a respective wheeled trolley. The wheels 46 of each trolley are in sets of two, one set for each side of the platform, and the wheels track upon the underside of the lower frame bars 12. The two wheels of each set are journaled on axles 47 between inner and and outer frame members 50 and 51, with ends of the axles threaded to take keeper nuts 52. A cross-bar 53 extends from the pair of frame members at

one side to those on the other side and is rigidly secured therewith. A tube 54, preferably dielectric formed from rigid plastic or other suitable material, fits over the cross-bar, extending from the inner frame member at one side to the inner frame member at the other side of a trolley. The tube is free to turn upon the cross-bar. These tubes, one for the trolley at one end and one for the trolley at the other end of the platform, seat in saddle notches provided by blocks 55 which surmount the hoists. Cap pieces 56 clamp the tubes to the blocks.

Hooks are carried by the inner members 50 of the trolley frames to overhang the track bars 12 along the inner sides thereof. One hook 57 lies central to the length of the frame member and is made integral therewith to serve a holddown function relative to the concerned track bar. Two other hooks 58 and 59 lie one to the front and the other to the rear of said hold-down hook and admit of being drawn against the track bar for locking the trolley to the bar. Nuts 60 for this purpose thread on guide stems 61 which carry the locking hooks.

In mounting the platform one end thereof has its trolley locked against movement relative to the platform while the other trolley is free to move along the bars 12. This safeguards the hoists against being subjected to a lateral bending stress as a consequence of placing the platform on a slope. There are of course instances where it is desired to incline the platform but of perhaps even greater significance is the ability to raise and lower the platform without necessitating an exact uniformity in the rate at which the two hoists are operated.

It is believed that the invention will have been clearly understood from the foregoing detailed description of our now-preferred illustrated embodiment. Changes in the details of construction may be resorted to without departing from the spirit of the invention and it is accordingly our intention that no limitations be implied and that the hereto annexed claims be given the broadest interpretation to which the employed language fairly admits.

What we claim is:

1. An elevated work-supporting platform comprising, in combination: a pair of spaced-apart vertical hoists, a deck, a rigid framework for the deck, said framework including a pair of parallel stringers extending longitudinally of the framework one at one side and the other at the other side of the longitudinal median line of the framework formed so that the underneath surface serves as a track rail, at least one trolley extending transversely of the framework in a position underlying the framework at one end thereof and providing wheels at each of the opposite sides tracking upon said underneath surface of the rails, means for mounting the trolley upon the head end of one of the hoists, and means for mounting the end of the framework which lies opposite that occupied by the trolley upon the head end of the other hoist, hold-down means being provided to prevent the rails being lifted off the wheels.

2. Structure as claimed in claim 1, said rails extending approximately the full length of the framework, the means for mounting said opposite end of the framework including a second trolley having wheels tracking upon the rails, means being provided for releasably locking at least one of the trolleys against movement endwise to the rails.

3. Structure as claimed in claim 2, said locking means comprising: at least one hooking finger carried by the trolley in a position to overlie a related one of the rails, and means for forcefully drawing the hooking finger downwardly so as to clamp the rail between said finger and a wheel of the trolley.

4. Structure as claimed in claim 2, said means for mounting the trolleys upon the head ends of the hoists comprising, for each trolley, a trolley frame including

a rigid bar located below the platform and extending transversely thereof, a tube of dielectric material sleeved upon the bar, a block surmounting the related hoist, and releasable means for clamping the dielectric tube to the block.

5. Structure as claimed in claim 1, the rails being tubular and the wheels being circumferentially grooved so as to straddle the rails.

6. Structure as claimed in claim 1, the framework for the platform having a second stringer at each of the two sides thereof located in paralleling spaced relation above the related rail-forming stringer in the vertical plane occupied by the latter, plate members occupying the space between said upper and lower stringers and welded as a web thereto, brackets securely bolted to the web at spaced intervals of the length of the platform, a section of guard rail for the platform having posts at each of the two ends, and quick-release clamping means carried by the brackets for rigidly securing each of the posts to a respective bracket.

7. Structure as claimed in claim 6, each of said brackets being secured by an upper and a lower bolt, several of said web-forming plate members being provided each formed to a rectangular plan configuration and being spaced apart center-to-center within the length of the framework a distance moderately exceeding the length of a section of guard rail, each of the plate members being provided with two sets of bolt-holes one to receive the upper and lower bolts for one and the other to receive the upper and lower bolts for the other of two brackets lying side by side in approximate touching relation.

8. Structure as claimed in claim 1, brackets being secured to the framework along at least one side thereof at spaced intervals of the length, said brackets each providing an outwardly facing open-front stall, a section of guard rail for the platform having posts at each of the two ends each arranged to lodge in the stall of a respective bracket, and a quick-release means for forcefully securing the posts against dislodgment from the stalls.

9. Structure as claimed in claim 8, the post having a horizontal pin located on a diameter thereof and extending by its ends laterally from the post, said quick-release means including a lever means operative, when activated, to exert outward pressure upon the concerned post at a point thereon elevated above the lower extremity of the post, each stall providing a shoulder against which the lower extremity of the post bears and having a means lying between said shoulder and said pressure point engaged by the protruding ends of the pins and producing a fulcrum about which the post rocks as outward pressure is exerted from the lever means.

10. Structure as claimed in claim 8, the post having a horizontal pin located on a diameter thereof and extending by its ends laterally from the post, said quick-release means including a lever means operative, when activated, to exert outward pressure upon the concerned post at a point thereon elevated above the lower extremity of the post, each stall providing a shoulder against which the lower extremity of the post bears and having a means lying between said shoulder and said pressure point engaged by the protruding ends of the pins and producing a fulcrum about which the post rocks as outward pressure is exerted from the lever means, the lever means comprising a first-order lever powered by a treadle-operated toggle-joint lever having an over-center throw.

11. An elevated work-supporting platform comprising, in combination: a deck, a rigid framework therefor, a section of guard rail for at least one side of the deck having posts at each of the two ends thereof, a respective bracket for each of said posts rigidly secured to the framework and formed to provide an outwardly facing open-front stall in which the post is adapted to be lodged, the posts each having horizontal pins protruding co-axially from opposite sides thereof, a levered quick-release means carried by each bracket operative, when activated, to exert

outward pressure upon the concerned post at a point thereon elevated above the lower extremity of the post, each stall providing a shoulder against which the lower extremity of the post bears and having a means lying between said shoulder and said pressure point engaged by the protruding ends of the pins to (1) produce a rest sustaining the weight of the post when the post is lodged in the stall, and (2) produce a fulcrum about which the post rocks as outward pressure is exerted from the levered quick-release means.

12. Structure as claimed in claim **11**, the lever means comprising a first-order lever powered by a treadle-operated toggle-joint lever having an over-center throw.

13. Structure as claimed in claim **11**, said rigid framework including a pair of parallel stringers extending longitudinally of the framework along each of the opposite sides thereof, the stringers being complemented at each side of the framework by a second paralleling stringer spaced vertically therefrom and having a connecting web in the space therebetween, the stringers each comprising a length of tubular pipe, each bracket having a rear profile configuration such that a median portion thereof seats against the web, the upper portion saddles the upper pipe, and the lower portion bears upon the lower pipe, said median portion of the bracket being bolted to the web.

14. Structure as claimed in claim **13**, the stall being defined by a back wall and outwardly extending cheek walls, the bracket having horns extending inwardly in the planes of said cheek walls above the upper of said pipes, the horns receiving the quick-release means in the space therebetween and providing fulcrum mountings for the first-order lever and for a plain lever serving as one of two links of the toggle-joint lever.

15. Structure as claimed in claim **12**, the stall being defined by a back wall and outwardly extending cheek walls, the bracket having horns extending inwardly in the planes of said cheek walls above the upper of said pipes, the horns receiving the quick-release means in the space therebetween and providing fulcrum mountings for the first-order lever and for a plain lever serving as one of two links of the toggle-joint lever, the other link of the toggle-joint lever being the foot-operated component thereof and having two treadles one to exert levered force upon the post to secure the same in the stall and the other to release said force.

References Cited by the Examiner

UNITED STATES PATENTS

734,321	7/1903	Hagan	182—222
1,934,000	11/1933	Piccirilli	182—113
2,794,687	6/1957	Harlan	182—141
3,190,390	6/1965	Daniel	182—1

FOREIGN PATENTS

1,066,366	1/1954	France.

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