Feb. 5, 1952 J. E. STEWART 2,584,240

LATERAL LOADING AND UNLOADING ATTACHMENT FOR FORKED LIFT TRUCKS

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FIG. 2

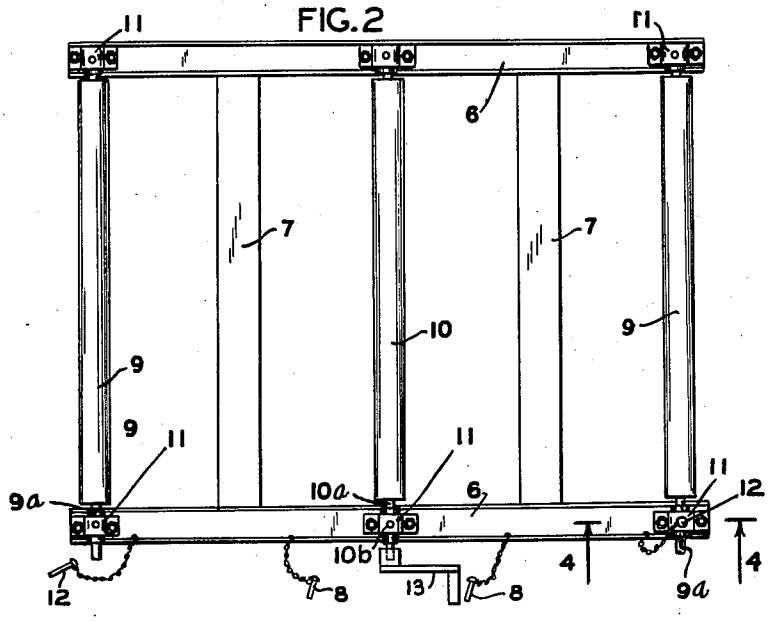


FIG. 3

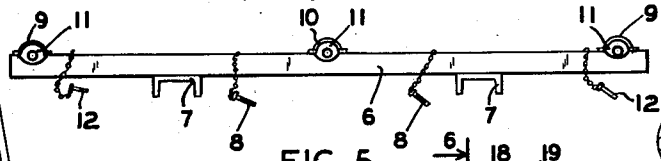


FIG. 1

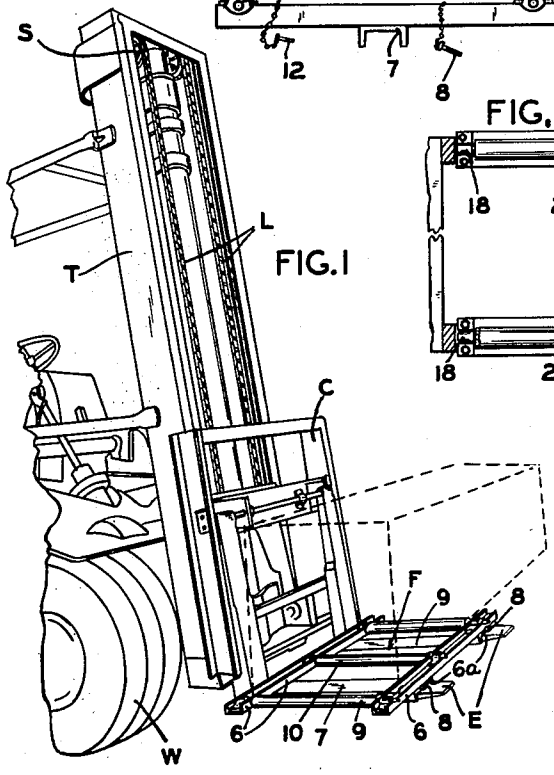


FIG. 5

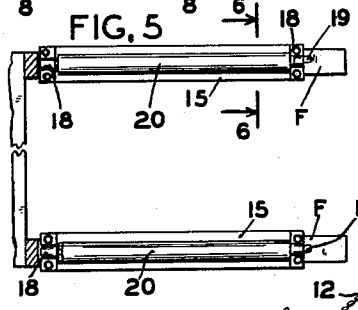


FIG. 6

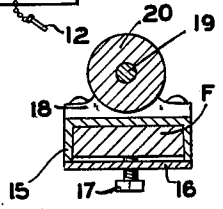
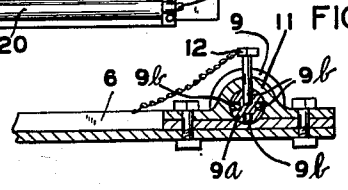


FIG. 4



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LATERAL LOADING AND UNLOADING ATTACHMENT FOR FORKED LIFT TRUCKS

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4 Claims. (Cl. 214—113)

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This invention relates to the loading and unloading of lumber into and from conventional lumber bins and closed or open motor vehicles or trailers. The invention has special applicability to conventional fork lift trucks for conversion thereof to load and unload multi-layer units of lumber and the like laterally of the forks of the truck.

It is an object of my invention to provide a simple, comparatively inexpensive assembly which can bodily and instantly be attached to the lifting forks of a lift truck for supplying an efficient mechanism for loading a stack or unit of lumber or other superimposed layer material into a bin, a rack or a closed or semi-trailer vehicle or truck, by delivery from one side of the longitudinally extending forks of the lift truck.

A further object is the provision of an assembled unitary structure of the type described, which enables loading or unloading of lumber or analogous material in superimposed layers to be readily accomplished laterally of the carrier or forks of the lift truck and with means for applying rotative power for loading and unloading.

Still another object is the provision of an assembled attachment of the class described which may be very quickly applied and locked upon the forks of a conventional lift truck and which when attached, will nevertheless enable the forward ends of the forks to be used for section separating and lifting purposes.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a perspective view showing the forward portion of a conventional fork lift truck having installed thereon an embodiment of my lateral roller loading unit;

Fig. 2 is a top plan view of the loading unit detached;

Fig. 3 is a front elevation of the same;

Fig. 4 is a fragmentary vertical section taken approximately on the line 4—4 of Fig. 2.

Fig. 5 is a top plan view showing a modified form of my invention adapted for lighter work, attached to the two forks of a lift truck carriage; and

Fig. 6 is a cross section taken on the line 6—6 of Fig. 5.

My roller loader attachment as shown in Fig. 1 is mounted on a conventional type of fork lift truck comprising a tiltable, adjustable upstanding tower T affixed to the forward end of a special truck chassis having as shown, widely spaced dual wheels W, said tower conveniently being extensible from the position shown to heights in excess of eighteen feet and being mounted forwardly at the chassis or truck frame for tilting adjustment backward and forward within a range in excess of ten degrees. The tower T has in conventional fashion, mounted thereon in suitable guides, a rectangular carriage C actuated as shown by a pair of heavy lift chains L which are secured at their lower ends to the rear of the carriage and are trained at their upper ends about heavy sheaves S. Carriage C has mounted thereon, a pair of lifting forks F which as shown, comprise generally L shaped rigid metal members suitably connected with the intermediate portion of the carriage and comprising upstanding shanks terminating at their lower ends in forwardly extending elongated forks or arms converging in thickness from their rear portions to their forward extremities E which are adapted when the truck is moved forwardly to wedgedly separate or divide a pile or stack of lumber disposed transversely of the length of the truck and to engage a layer of the pile. The above recited structure is conventional to several types of fork lift trucks now extensively manufactured for handling stacks or loads of lumber and other building material disposed in superimposed layers.

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My unitary attachment in the form illustrated, comprises a rectangular frame composed of a pair of widely spaced, parallel, shallow channel members 6 constructed of heavy iron or other rigid metal with the vertical flanges or webs upstanding and with the intermediate and horizontal webs thereof disposed at the bottom for welded or other rigid connection with the tops of perpendicular inverted channel irons 7 forming therewith a strongly reinforced rigid rectangular frame. The over-all length of such frame is somewhat less than the length of the horizontal forks F of the lift carriage to permit my loader structure when attached, to be disposed at the forward edge thereof some distance inwardly of the extremities E of the forks. The inverted channel members 7 are disposed in spaced relation to fit with close working clearance, the horizontal forks F and the individual channels 7 are of a width to snugly embrace the widths of the forks for interlocking therewith in superimposed relation as shown in Fig. 3.

To lock the heavy rectangular frame in attached position upon the forks F, I provide a pair of heavy pins 8 which are connected by chains

with the forward transverse channel members 6 and which are adapted to engage vertical apertures 6a appropriately formed in the forward portions of forks F short distances rearward of the extremities of the forks.

Rotatably mounted upon the rigid frame and transversing the transverse channels 6, I provide a series of parallel spaced loading rollers 9 which extend longitudinally of the lift carriage and which include as shown, a pair of side rollers journaled on axes disposed in close relation to the side ends of the frame and preferably outward of the horizontal forks F. A center longitudinal roller 10 is preferably included in my loader structure, all of said rollers being affixed to axial metal shafts 9a and 10a respectively, which are journaled in suitable, preferably self-aligning bearings 11 affixed to the central webs of the channel irons 6. The rollers proper are preferably coated or integrally constructed from non-abrasive, somewhat compressible material such as hard rubber. Roller shafts 9a and 10a extend at their forward ends beyond the forward transverse channel 6 and terminate in squared extremities adapted to receive the socket of crank handles or levers for applying manually, torque to the rollers, to facilitate loading or unloading. The bearings 11 are preferably provided with vertical apertures through the upper portions thereof to receive retaining pins 12 which are adapted to engage ratchet teeth or notches 9b and 10b formed in portions of the periphery of the roller shafts, thus to retain the rollers when desired, against rotation. My loader attachment includes a rocker or crank lever 13 readily connectible with and disconnectible from the forward squared ends of the shafts 9a and 10a.

The over-all height of my unitary attachment above the horizontal forks of the lift truck is very slight due to the channeled structure of the frame and the fact that the bearings 11 are mounted upon the intermediate webs of channel members 6 with the roller shafts disposed in close spaced relation to the narrow, upstanding flanges of said transverse channels and with the enlarged rollers 9 and 10 having their ends interposed between the channels and extending at their upper surfaces only a slight distance above the upstanding edges of the channels 6. Thus, the lift forks with my unitary attachment thereon may be conveniently manipulated below piles or stacks of lumber supported upon footings or racks in a bin or may be interposed between sections of a pile of lumber which have been previously separated by lift action with dividers interposed between the sections.

In use, the lift carriage of the truck, with my loading assembly attached thereto may be loaded transversely with a bundle or package of superimposed boards or other analogous building material in conventional fashion by moving the truck forwardly with the forks F disposed at proper height to underlie with my attachment also underlying the lowermost stratum of boards to be engaged. The forks with my attachment thereon will underlie a unit or stack of lumber supported upon pedestal blocks or fittings and furthermore, may be imposed between separate sections of a stack held divided by rollers or conventional divider bars.

With my attachment, the carriage of the lift truck may also be loaded laterally from a boxcar, truck, semitrailer or from a bin.

The stack or bundle of lumber or other building material centrally and transversely disposed upon the rollers 9 and 10 may then be transported to a desired point such as a bin, truck or other vehicle for transferring the load thereto.

In this operation the lift truck is moved in a line perpendicularly to the entrance of the bin or the end of the truck or vehicle to be loaded and the bundle or stack of superimposed material may then be rolled laterally of the forks F and the truck to move the lumber longitudinally into the bin opening or end of the receiving vehicle. In unloading the rollers or the appropriate roller is forcibly revolved by applying the crank lever 13 to the forward squared extremity of the roller shafts and of course, in loading the carriage, the rollers may be positively driven in similar manner.

When the load is disposed upon the attachment and evenly balanced for transportation or elevation, at least a pair of the pins 12 are fitted into the ratchet notches 9b at the forward portions of the roller shafts to positively retain the rollers against turning.

The rigid and very sturdy construction of my assembly due to the two sets of heavy channel irons with the horizontal intermediate webs thereof being in flat contact and rigidly secured. provides a structure which will withstand the heavy stresses of lumber loads.

It will of course be obvious that loads or stacks can be rolled on or off from either side of the lift carrier.

The ease and quickness of attachment of my assembled unit is an important feature, it being only necessary to slide the horizontal lift forks in the inverted channel members 7 thereby superimposing the attachment on the forks with the rear upstanding channel members 6 disposed against the rear of the lift carriage. Thereafter, the pins 8 preferably carried by chains at the forward channel 6 may be inserted in the apertures formed at the outer portions of the forks to lock the attachment against forward displacement from the forks.

From the foregoing description, it will be seen that I have provided a simple, highly efficient lateral loader unit which by quick attachment to the forks of a conventional lift truck, will convert that truck for loading and unloading laterally from the lift carriage.

It will further be seen that my attachment is in the form of a fully assembled unit adapted to be bodily applied to or removed from the lift forms through superimposed locking relation and mere insertion of pins or other fastening means to prevent longitudinal displacement on the forks.

It will of course be understood that various changes may be made in the form, details, arrangement and parts without departing from the scope of my invention.

In Figs. 5 and 6, I have illustrated another form of my lateral loading and unloading attachment designed principally for lighter work. Here, my structure comprises a pair of roller mounting units, each adapted for instant attachment to one of the horizontal forks of conventional lift truck carriages.

Each of said units as shown comprises a heavy inverted channel member 15 of a width to straddle with close working fit, one of the forks F of the lift truck carriage and of a length some inches short of the length of the fork. The channel members 15 have locking means associated therewith to positively clamp the channels in operative position upon the forks and as shown,

the locking means comprises for each channel at least a pair of transversely disposed plates 16 rigidly secured across the depending channel sides or flanges as by welding and having the centers thereof vertically tapped to receive a set screw locking bolt 17 which clamps against the underside of the respective fork. Split bearings 18 are affixed to the forward and rear ends of the respective channels 15 and have journaled therein the end portions of a roller shaft 19 carrying the resilient roller 20. Rollers 20 of course, extend longitudinally of the lift truck and of the forks F and have the forward ends of their shafts provided with squared extremities for reception of a crank lever.

The operation of the modified unit comprising a pair of said described structures is similar to that of the preferred form first described. This last described unit lends itself to manufacture at low cost and is efficient for handling comparatively light loads. The channel mountings may be immediately attached or detached by sliding upon the free ends of forks F and by setting or releasing the set screw clamp 17 as the case may be.

What I claim is:

1. A lateral loading assembly for attachment to a forked lift truck having in combination a rigid, horizontal, rectangular frame of a length somewhat less than the length of the forks of a lift truck and of a width somewhat greater than the distance between the outer edges of said forks, means at the underside of said frame for interlocking connection with the forks of a lift truck, instantly securable means for locking said frame to said forks to prevent forward displacement thereof longitudinally of said forks and at least a pair of lumber-moving rollers journaled on parallel horizontal axes adjacent the respective sides of said frame and extending longitudinally of said forks and means for imparting torque power to said rollers to positively move lumber supported on either of said rollers.

2. A lateral loading and unloading attachment for a forked lift carriage comprising at least a pair of attachment elements of inverted U-shape, each adapted to straddle and be superimposed upon one of the lift forks of a carriage, two sets of aligned bearing members, each set having rigid interconnection with one of said attachment elements, said bearings extending longitudinally of said lift forks when the structure is attached, means cooperating with said attachment elements for securing the structure against longitudinal displacement from said forks and a pair of rollers, each journaled in one set of said bearings.

3. A lateral unloading assembly for ready attachment to conventional forked lift carriages having in combination a pair widely spaced frame elements of elongated, rigid structure adapted each to at least partially surround one of the forks of the lift carriage and having dependent flanges adapted to prevent lateral displacement of said elements, said flanges being adapted to engage against side edges of said forks, instantly securable means engageable with the forward portions of said forks to prevent forward displacement of said elements longitudinally on said forks and said apparatus including at least a pair of elongated rollers extending parallel with said elongated fork-engaging elements and journaled on horizontal axes for receiving and discharging material transversely of said forks.

4. In a forked lift truck or the like having a lift carriage provided with a plurality of forwardly extending, widely spaced forks, lateral loading and unloading apparatus comprising a frame having at least a pair of longitudinal attachment elements, each adapted to be superimposed longitudinally upon one of the lift forks of the carriage and having a longitudinal depending flange for engaging against the outside edge of the related fork, said flanges preventing lateral displacement of said frame from said forks, at least a pair of elongated rollers journaled on parallel horizontal axes and extending parallel to said attachment elements and journaled on said frame and means engageable with the forward portions of said forks for releasably locking said frame to said forks to prevent forward displacement thereof longitudinally of said forks.

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