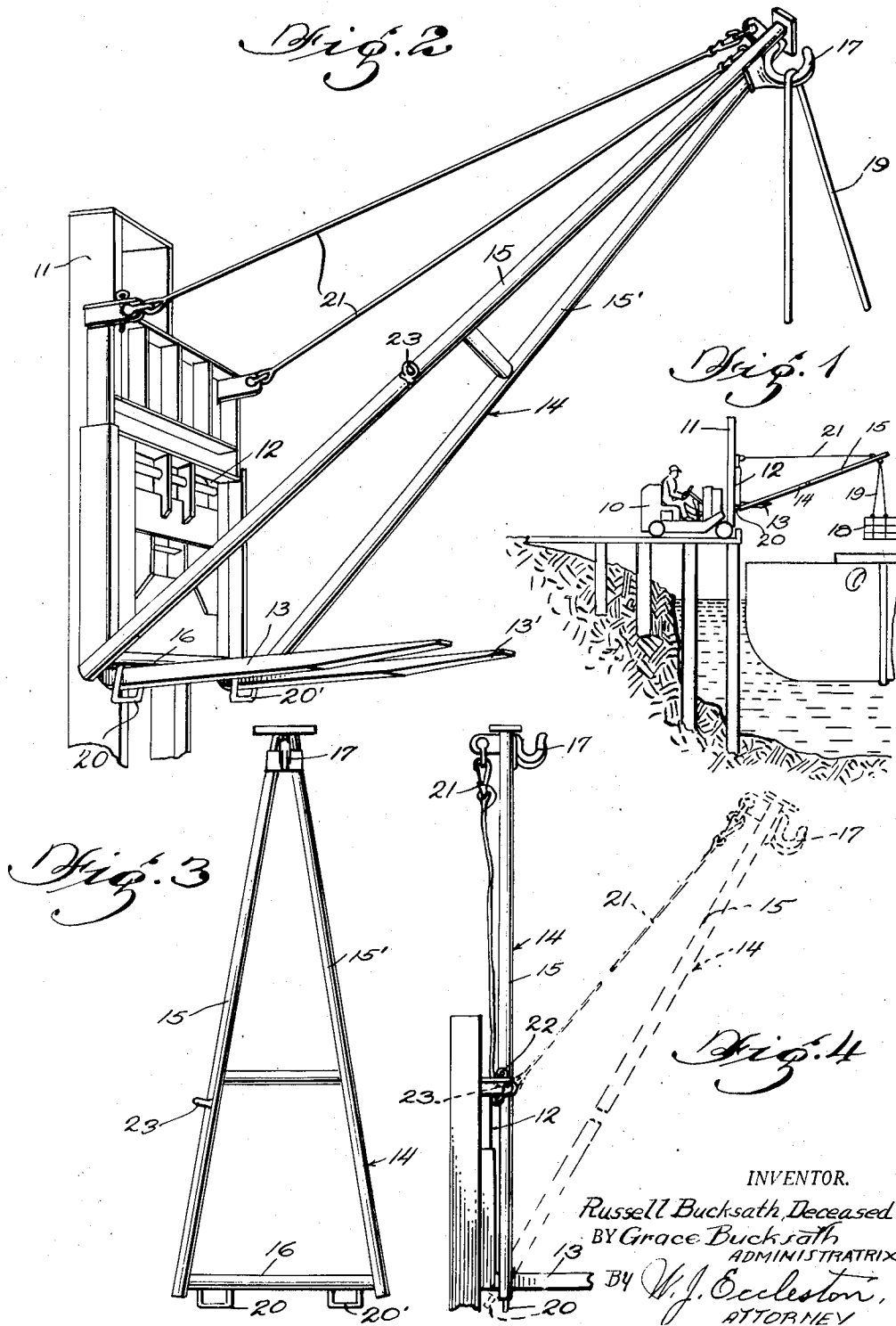


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R. BUCKSATH
FORK LIFT TRUCK WITH BOOM
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FORK LIFT TRUCK WITH BOOM

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6 Claims. (Cl. 214—95)

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The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment of any royalty thereon.

This invention relates to a fork lift truck with a boom, and more particularly, to a lift truck of conventional commercial design, convertible into a derrick or crane by a removable boom or outrigger.

Fork lift trucks have found wide acceptance in warehousing operations; and it is possible, by employing them, to stack, load, or otherwise move great quantities of matériel in a comparatively small amount of time and with a great saving in man power. However, the type of matériel which can be processed by means of the conventional fork lift truck is limited to articles of comparatively small or medium size, as the forks of the lift truck are unable to support a large article, e. g., an article twice the size of the forks. Also, the operational range of a conventional fork lift truck is limited to removal of matériel from floor level to an elevated level and vice versa, but does not reach levels below the floor level; for instance, it is not possible to load or unload a barge with a fork lift truck standing on an elevated pier.

It has been proposed to remedy these shortcomings of a conventional lift truck by mounting on its forks or other load-supporting means a boom or outrigger, carrying at its free end a hook or other load-supporting means, whereby the fork lift truck is converted into a wheeled derrick or crane. Examples of such industrial trucks are shown in U. S. Patent No. 2,364,493, Ulinski, and French Patent No. 748,739, Fenwick S. A. These devices consist of conventional industrial lift trucks, and removably mounted at or near the free end of the load-supporting surface a pivoted outrigger terminating in a hook. Although well adapted to accomplish the objects for which they are intended, these devices possess certain disadvantages which this invention overcomes, and which are readily apparent by comparing them with the preferred embodiment of this invention.

Accordingly, it is an object of this invention to provide an attachment for an industrial lift truck of strong and lightweight construction, and without movable parts, capable of converting the truck into a crane or derrick.

Another object of this invention is a provision of a boom or outrigger capable of being attached to the forks of a lift truck so as to minimize strain on the forks of the lift truck.

A further object of this invention is accomplished by the aforementioned attachment of an

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industrial fork lift truck in enabling the operator of the lift truck to install the same without help or tools.

Still another object of this invention is a combined industrial lift truck and boom, which can be used either as fork lift truck or as a crane or derrick, without removing the boom from the truck.

A further object of the present invention is an industrial lift truck with boom attachment which, when assembled with attachment in inoperative position, occupies no more area than without the attachment, thus enabling the truck to be parked in a small parking space without the need of removing the attachment.

These and other objects and advantages of the present invention, not present in the prior art, will become more readily apparent through the following description of a preferred embodiment of the invention, illustrated in the appended drawing.

In a fork lift truck with boom, according to the present invention, a conventional industrial fork lift truck is equipped with a boom having a load-supporting device such as a hook at one end and carrying a pair of spaced brackets at its other end, which are threadable over the free ends of the forks and slidable over substantially the entire horizontal length of the forks.

In the appended drawing, which illustrates a preferred embodiment of the invention,

Figure 1 is a schematic view of a fork lift truck with boom in operative position and engaged in the loading of a barge from a raised pier;

Figure 2 is a perspective view of a fork lift truck and boom in assembled relation, the truck being shown in part only;

Figure 3 is a front elevation of a boom attachment in accordance with my invention; and

Figure 4 is a side elevation of the boom attachment corresponding to Fig. 3, and showing the attachment in inoperative (full lines) and in operative (broken lines) position.

More particularly, reference numeral 10 indicates the body of an industrial lift truck, equipped with an upright 11, whereon is mounted in vertically slidable relation a load-supporting device 12, comprising in the illustrated device a pair of substantially L-shaped forks 13, 13', the horizontal tines of which extend forwardly of the truck body 10. It will, of course, be understood that such a lift truck is conventional and well known to the art, and is not claimed by me as such, other than in combination with the boom attachment hereafter described. The said boom attachment,

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designated by reference numeral 14 in Figure 1, consists in my preferred embodiment of a pair of converging beams 15, 15' which may be of solid or tubular cross section. A base portion 16 is welded or otherwise joined to the divergent ends of beams 15, 15', so that beams 15, 15' and base 16 form an isosceles triangle. At or near the apex of the triangle is provided a hook 17 adapted to support a load 18 by means of a sling 19 or equivalent means; the hook 17 may be fixed in place (as shown in the drawings) or conventionally supported from a horizontal shaft or trolley (not shown) associated with the free ends of the boom at the apex of the triangle. At the base of the boom is a pair of brackets 20, 20', spaced from each other for distance equal to the space between fork tines 13, 13'. Each bracket is of sufficient width to permit the insertion of a tine (13, or 13') into the bracket and to permit a pivotal or rocking motion of the boom relative to the fork, when the boom rests on the fork, while at the same time holding the boom against lateral displacement from the fork. Cable means 21 extend from the apex of the triangle to the vertically slidable load-supporting means 12 at a point or points above the horizontal portion of fork 13, 13', so as to hold the boom in angular relation to the upright 11 of truck 10.

When it is desired to assemble lift truck and boom, the following steps are performed: The fork of the lift truck is lowered, cable means 21 extending from the apex of the boom are fastened in place to the vertically sliding portion 12 of the truck by suitable means e. g., snap hooks 22, and the free ends of tines 13, 13' are inserted into brackets 20, 20', of the base 16 of the boom. Finally, the base of the boom is slid towards the body 10 of the truck until base 16 abuts on the ends of the tines 13, 13' proximate the upright 11. In this manner, a firmly braced outrigger structure is obtained, which is able to support loads of considerable magnitude. As load 18 exerts a downward pull at the apex of the boom triangle, it tends to urge the base end of the boom to a direction opposite the free ends of the tines 13, 13' of the lift fork; thus, as base 16 of the boom acts as a bearing surface at or near the base of the fork, it eliminates the undesirable shearing effect on the tines which would result if the boom were supported on the fork at or near the free ends of the tines. By selecting cable means 21 of suitable length, the angle between the boom and the upright can be adjusted so as to elevate or depress the boom to the desired position.

When it is desired, after assembling lift truck and boom, to use the forks of the truck rather than the boom itself, it is not necessary to remove the boom. In such a case, the boom is tilted upwardly to a vertical or nearly vertical position (as shown in Fig. 4 in full lines) and held in place by appropriate means, e. g., by insertion of bolt 22 associated with sliding portion 12 into eye 23 on boom 14. This leaves the horizontal portions of the fork unobstructed and permits them to engage loads in the same manner as if the boom were removed from the truck.

In the foregoing description of a fork truck with boom in accordance with the present invention has been illustrated the construction and operation of a preferred embodiment of the same. However, it will be understood, of course, that it is not intended to limit the scope of the invention to any specific structural details, as for instance, the triangular shape of the boom or other details desirable but not essential for its operation. In-

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asmuch as equivalents of specific details described parts will readily occur to the expert, which equivalents are thus desired to be embraced within the scope of the present invention, the latter is intended to be limited only by the appended claims.

It is claimed:

1. In combination with a lift truck of the type comprising a vehicle, an upright extending from said vehicle, and projecting load-supporting means slidably associated with said upright; a boom adapted to support a load from one end, a bearing surface proximate the other end of said boom for pivotal abutment on said load-supporting means, means removably positionable on said load-supporting means and adapted to hold said bearing surface in pivotally abutting engagement with said load-supporting means proximate said upright and preventing lateral displacement of said boom, and means for holding said boom in angular relation relative to said upright.

2. In combination with a fork lift truck of the type comprising a vehicle, an upright extending from said vehicle, and a projecting load-supporting fork having spaced tines, said fork being slidably associated with said upright; a boom adapted to support a load from one end, a bearing surface proximate the other end of said boom adapted to pivotally abut on said tines, spaced bracket means loosely interfitting with and removably positionable on said tines to hold said boom proximate said upright and against lateral displacement, and means for holding said boom in angular relation relative to said upright.

3. A boom removably positionable on projecting load-supporting means of a lift truck, said boom comprising an isosceles triangle, means proximate the apex of said triangle for supporting a load, and means opposite the apex of said triangle for removably positioning said boom on said load-supporting means, said means comprising a bearing surface at the base of said triangle pivotally abutting on said load-supporting means, and bracket means associated with said bearing surface and loosely interfitting with said load-supporting means.

4. A boom removably positionable on the projecting tines of a fork lift truck, said boom comprising an isosceles triangle, means proximate the apex of said triangle for supporting a load, and means proximate the base of said triangle for removably positioning said boom on said tines, said means comprising spaced brackets loosely interfitting with said tines.

5. A boom removably positionable on the projecting tines of a fork lift truck, said boom comprising an isosceles triangle, means proximate the apex of said triangle for supporting a load, a bearing surface at the base of said triangle adapted to pivotally abut on said tines, and spaced means at said base removably positionable on and loosely interfitting with said tines to prevent lateral displacement of said boom relative to said tines.

6. In combination: A fork lift truck of the type comprising a vehicle; an upright extending from said vehicle; a projecting load-supporting fork slidably associated with said upright and having spaced tines; a boom comprising a pair of convergent beams, load-supporting means at the apex of said boom, and spaced bracket means on the opposite end of said boom, said bracket means interfitting loosely with said tines and removably and pivotally supporting said boom on said tines proximate said upright; and means for

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holding said boom in angular relation to said upright.

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GRACE BUCKSATH,
Administratrix of the Estate of Russell Bucksath, Deceased.

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