May 20, 1952 H. N. WELBURN 2,597,765

FORK TRUCK

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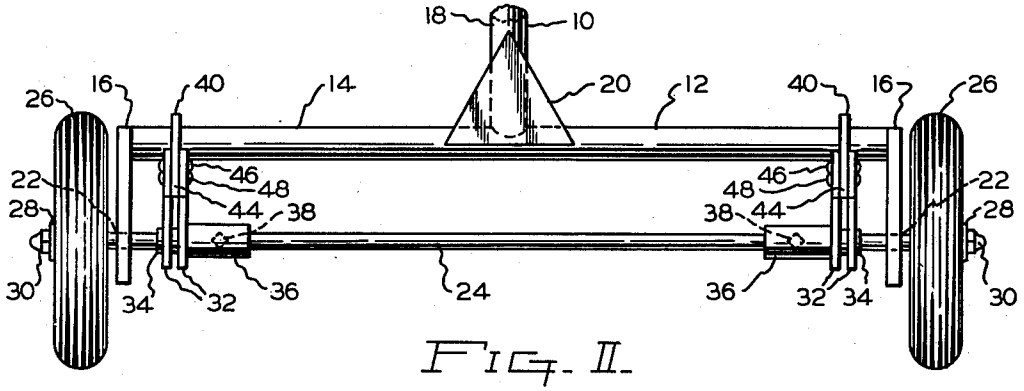


FIG. II.

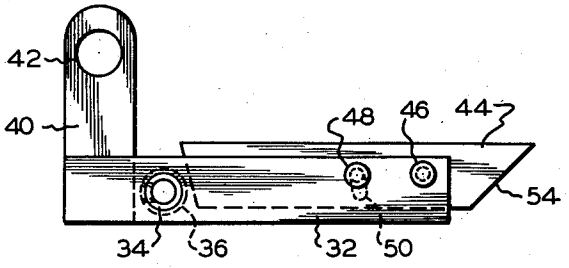


FIG. III.

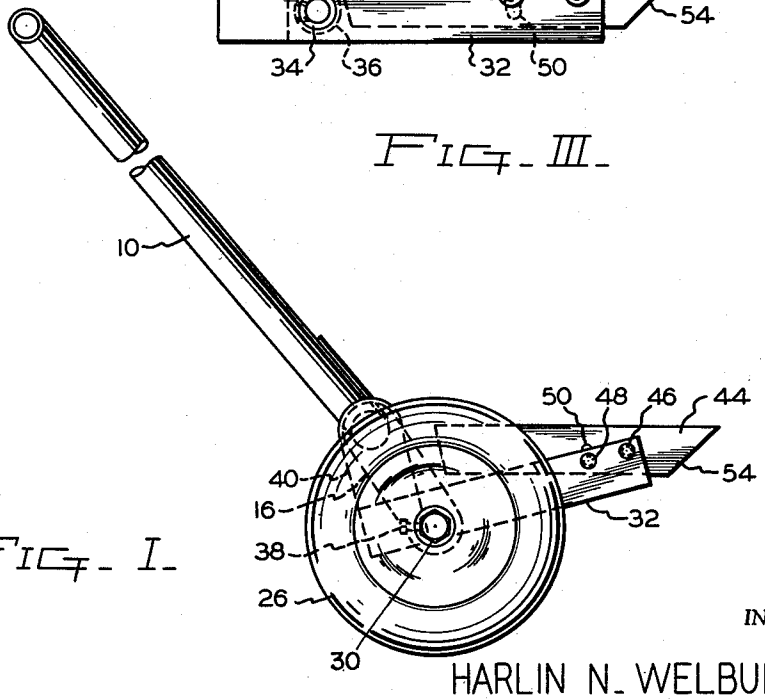


FIG. I.

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FORK TRUCK

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1 Claim. (Cl. 280—53)

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This invention relates to fork trucks adapted to lift and carry articles so formed or contained as to act as suspended loads.

In factories, machine shops, and the like, the movement of materials and supplies between operations, in the absence of a conveyor system, is a big problem. Loaded tote boxes, baskets and other material handling devices as well as some finished or partially finished goods in which the center of gravity is below a projection by means of which they can be lifted, constitute the loads which are most easily handled by my lift truck. This is especially true of containers which must be kept level because they hold liquids or small parts which might fall out if they were tilted during the lifting or carrying operation.

Of the mechanical devices presently used for this type of operation, two are outstanding in their shortcomings. The ordinary warehouse truck, having a forwardly extending blade which may be forced underneath a load, is a common example. This type of truck is very difficult to use on a low load because of the necessity of holding the load while forcing the blade thereunder. Also, by reason of its carrying the load in a tilted position, it is unusable in many types of lifting and moving operations.

Another presently used truck is the type having a wheel-supported frame carrying a superstructure which operates on the principle of a parallelogram. The superstructure in its lowered condition is moved into lifting position and raised, thereby raising the load and making it possible to move the same. This truck, while lifting and carrying the load without tilting it, is expensive to manufacture and awkward to move in restricted places.

I have devised a lift truck of the fork type having forwardly extending tines carrying self-levelling, load-engaging members. The tines are fulcrum-mounted and actuated by a frame controlled by the handle. The load-engaging members are mounted for pivotal movement in a vertical plane about points situated near the forward ends of the tines. To provide one truck which will lift different loads of varying length, the tines are mounted on the fulcrum for lateral movement with respect thereto. By incorporating means which limit the pivotal movement of the load-engaging members I have made it possible to carry loads which are not exactly centered with respect to the pivot point of the load engaging member.

The articles which may be lifted or carried by such a truck preferably have handles or carrying flanges adjacent their end walls, the said handles, or carrying flanges, being situated on a level with or above the center of gravity of the article. The common tote box, carrying pan or basket, and other similar containers are devices of this character.

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It is, therefore, an object of this invention to provide a simple, inexpensive lift truck of the fork type adapted to lift and carry loads.

A further object is to provide a fork truck, the forks of which are adjustable laterally to accommodate loads of varying width.

A still further object is to provide a fork truck having load engaging members mounted in a self-levelling manner.

Further objects and advantages of my invention will be apparent from a consideration of the following specification in connection with the appended claim and accompanying drawings in which,

Fig. 1 is a side view in elevation of such a fork truck,

Fig. 2 is a front view in elevation, and

Fig. 3 is a detail view in elevation of one of the tine members and its support.

In the drawings I have shown the fork truck 10 having a main frame 12 of U-shape, the U being composed by a cross bar 14 and the attached legs 16. The cross bar 14 carries a T-shaped handle 18, the juncture between the two being preferably strengthened by the triangular member 20 which may be welded to the cross bar 14 and the handle 18. The arms 16 are apertured at 22 to receive the main axle 24. The axle 24 operates not only in conjunction with the wheels 26, but also as a fulcrum means for structure to be described later. Also, the main frame 12 is an actuator structure, and may be pivotally mounted on the axle 24 as shown, or upon other structure.

Mounted on the axle 24 are the wheels 26, which I have shown held in place by the washers 28 and the crown nuts 30. The wheels should be of the type required for the particular load and floor condition encountered, and are shown as having rubber tires and having suitable bearings for engagement with the axle 24.

The load supporting members or tines are symmetrical and only one will be described. Two parallel supporting bars 32, constituting a tine of the fork truck, are journaled on a collar 34, turned down from a sleeve 36, which sleeve 36 embraces the axle 24, thereby providing a fulcrum mounting for the tine. The sleeve 36 is preferably equipped with a set screw 38 to posi-

tion the sleeve 36 longitudinally with respect to the axle 24, and to maintain this position.

At the rear end of the parallel bars 32 is a member 40 which is mounted between the parallel bars 32. The member 40 may be mounted as shown, or otherwise, but it operates as a lever to control the position of the supporting bars 32, in conjunction with the cross bar 14. The member 40 is apertured at 42 to receive the bar 14 but it could merely lie behind the bar 14.

The load-engaging member 44 is positioned between the parallel bars 32, and is mounted for rotative movement about a pin 46. A second pin 48 is mounted between the parallel bars 32 and cooperates with the slot 50 formed in the member 44 to limit the rotative movement thereof about the pin 46.

The member 44 has its leading edge cut off at an angle as at 54 to enable it to be moved down relatively close to the floor.

It will be appreciated that, with the construction shown and described, the parallel bars 32 may be controlled by movement of the handle 18. In operation then, the entire truck assembly is moved up adjacent a suitable load to be lifted, at which time the handle 18 is elevated to a substantially vertical position. It will then be found that the parallel bars 32 and the members 44 are substantially horizontal, and will slide under the arms or carrying flanges of small tote boxes and the like. The members 44 are slid under the handles or carrying flanges of the load and the handle 18 is then rotated to substantially the position shown in Fig. 1. By this rotation of the handle 18, the forward end of the parallel bars 32, and specifically the pin 46 will be elevated, as shown in Fig. 1, while the member 44, being loaded, will tend to be self-levelling during the lifting operation. This will lift the load from the floor, in which position it may be moved easily.

The truck may be unloaded, of course, in exactly the reverse manner.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

A fork truck comprising a horizontal axle constituting a fulcrum, wheels supporting said axle at opposite ends, a pair of tine members supported upon said fulcrum for pivotal load supporting movement in a vertical plane, at least one of said members having a sliding connection with said axle for lateral adjustment thereon, an actuator frame for said tine members including a U-frame member having a handle portion at one end, the leg portions of said frame member being attached at their ends to said axle for pivotal movement about the axis thereof, said tine members having load engaging portions extending forwardly from said axle and actuator engaging portions likewise extending from said axle and engaged by said U-frame member to rock said tine members about said axle to lift the load, and load engaging members on said tines and having pivotal connections with the outer end of said load engaging portions.

HARLIN N. WELBURN.

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