

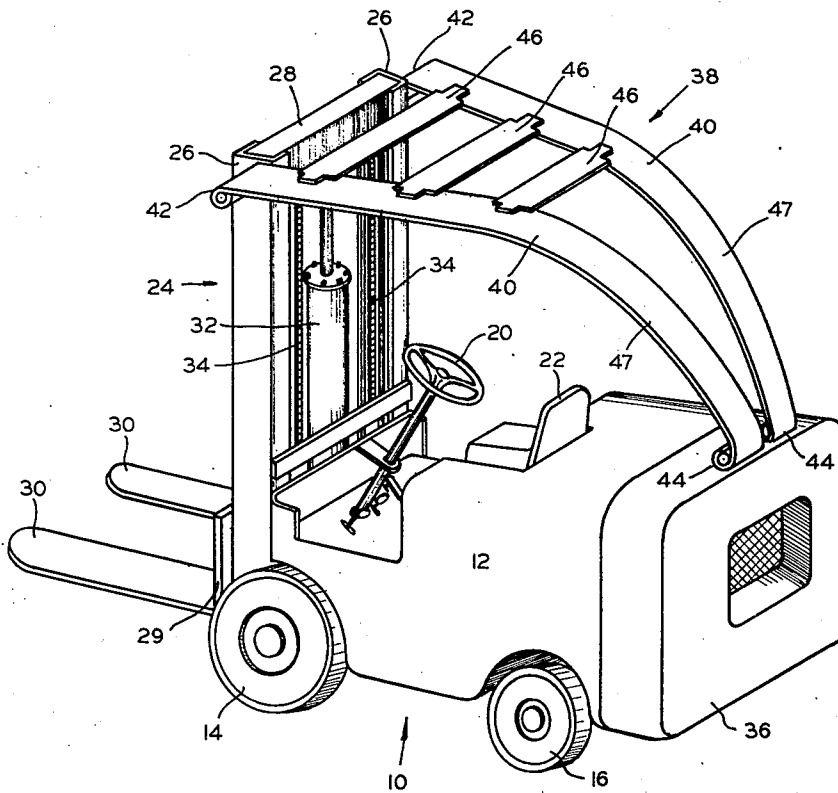
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R. H. DAVIES

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OVERHEAD GUARD FOR AN INDUSTRIAL LIFT TRUCK

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INVENTOR.

ROBERT H. DAVIES

BY

J. Frederick Bechtel

ATTY.

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OVERHEAD GUARD FOR AN INDUSTRIAL LIFT TRUCK

Robert H. Davies, Kalamazoo, Mich., assignor to Clark Equipment Company, a corporation of Michigan

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This invention relates to overhead guards for the protection of operators of industrial lift trucks such as are commonly employed for the handling of materials in factories and elsewhere.

These trucks have a tiltable mast structure ahead of the operator's station, and forwardly projecting fork frames or other load handling devices are mounted for vertical movement on the mast structure. The truck may be utilized to transport materials held by the load engaging devices, and to stack these materials by elevating the load handling device on the mast structure in order to put one lot of material on top of another.

In the manipulation of the truck during such a stacking operation, if the load shifts because of careless handling or because of the rough floor or for any other reason, material may fall from the load handling device. Such falling material might injure the operator of the industrial lift truck, and various types of overhead guards have been provided heretofore to prevent injury to the operator by falling objects.

It is the object of the present invention to provide an improved overhead guard structure for an industrial lift truck which is simple and inexpensive, and applicable to trucks of all types.

One of the difficulties encountered in providing an overhead guard for the operator of a lift truck is that the mast structure ordinarily is tiltable forwardly and rearwardly through a considerable angle. Such tilting action is necessary for two reasons. One is to enable the forks on the mast to be tilted back after material has been picked up so that when the material is transported by the truck it will be cradled against a portion of the elevator structure of the truck and thus will not be readily displaced from the forks. The reason for making the mast structure tiltable forwardly is to facilitate depositing material on top of a stack after it has been elevated.

Some previous overhead guards structures of which I am aware have been secured solely to the body portion of the lift truck, ordinarily at four locations, two ahead of the operator and two behind, so that the guard extends over him.

Other overhead guards have extended between the mast and a rear portion of the truck but all such guards have been rigid, with some provision being made to accommodate movement of the rear end of the overhead guard when the front of the guard is moved by the tilting of the mast structure.

Still other guards have been secured solely to the mast structure extending rearwardly out over the operator.

In carrying out my invention, I provide a flexible structure connected between an upper portion of the mast and a rear portion of the truck and extending over the operator's head. Since the overhead guard is flexible, no complex structure is necessary to provide for the movement of the rear end of the guard when the front end moves; thus a very simple yet effective overhead guard is provided.

For a clearer and more complete understanding of my

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invention reference should be had to the accompanying drawing in which the single figure is a perspective view of an industrial lift truck employing my invention in preferred form.

Referring to the drawing, the numeral 10 indicates generally an industrial lift truck. This vehicle includes a body portion indicated generally by the numeral 12 which is mounted on four wheels in the usual manner. In the industrial truck illustrated, the front wheels 14 (only one of which is visible in the drawing) are drive wheels and are operated by prime mover means such as an internal combustion engine located within body portion 12. The rear wheels 16 (only one of which is visible) are dirigible wheels and are connected to an operator's steering wheel 20 by means of a conventional linkage for steering the vehicle. The operator's station of which the steering wheel 20 is a part includes also a seat 22.

At the front end of the body portion of the truck is located a vertically disposed telescopic mast structure indicated generally by the numeral 24. This mast is pivotally mounted at its lower end on the body portion of the truck and is arranged to be tilted forwardly and rearwardly by conventional means (not shown). The mast structure 24 includes an outer guideway formed by a pair of channel members 26 and an inner slide member 28 which telescopes within the outer guide structure 26, 26.

A load supporting carriage 29 is arranged to move upwardly and downwardly on the inner slide member 28. The load supporting carriage as illustrated herein is provided with a pair of forwardly projecting fork tines 30 which are adapted to engage beneath a load to be transported and raised. Such raising action is produced in a conventional manner by an hydraulic motor 32 comprising an outer cylinder and an inner piston which is arranged to raise and lower the load supporting carriage 29 and the fork tines 30 through a chain and sprocket mechanism. The chains which form a portion of this mechanism are indicated on the drawing by the numeral 34.

The truck 10 also includes at the rear end thereof a counterweight 36 which ordinarily is made of metal and is secured to the rear end of the truck to counterbalance loads which are carried on the fork tines at the front of the truck.

The overhead guard of my invention is indicated in the drawing generally by the numeral 38. In the form illustrated in the drawing, the overhead guard comprises a pair of elongated resilient members 40 which may be made of spring steel or other equivalent material. These two members are connected respectively between the upper end of the fixed mast portions 26 and the counterweight 36, the connection with the former being indicated by the numerals 42 and the connection with the latter being indicated by the numerals 44. Preferably the connections 42 and 44 are arranged to provide for a slight pivoting action of the flexible members 40 with respect to the mast and counterweight. However, since the members 40 are flexible such pivoting action is not essential.

In the overhead guard illustrated in the drawing, three cross members 46 are connected between flexible members 40 in order to prevent boxes or packages which might fall from the fork tines 30 when they are elevated from striking the operator of the machine at his station 20, 22. It will be understood, of course, that wire mesh or other equivalent structure could be connected between flexible members 40 instead of or in addition to member 46, if desired, depending on the character of the load being handled.

Ordinarily, the flexible members 40 are so constructed that most of the flexing occurs in the areas indicated on the drawing by the numerals 47; however, it is not essential that these portions of the members 40 provide most of the flexure. The important thing is to arrange the

overhead guard in a manner such that it will clear the operator's head at all positions of the mast 24.

It is believed that it will be clear without further explanation that as the mast structure 24 is tilted forwardly and rearwardly, the overhead guard 38 flexes and pivots at its connections to allow such tilting movement while providing a guard over the head of the operator at all times. The guard, of course, should be made strong enough to withstand the heaviest of materials which might fall on it. Thus, I have provided in a very simple manner an overhead guard for an industrial lift truck which is inexpensive to construct and adaptable to practically all lift trucks.

Modifications may be made in my invention by those skilled in the art. Therefore, it should be understood that I intend to cover by the appended claims all such modifications which fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An industrial truck having a body portion, an upright load supporting mast pivotally mounted on the front end of the body portion adjacent the lower end of the mast for fore and aft movement, load supporting means mounted for vertical movement on the said mast, a counterweight mounted on the opposite end of the said body portion, an operator's station in the central portion of the said body portion, and an overhead guard comprising a pair of flat, flexible metal strips having their one ends pivotally connected to the upper portion of the said mast and their other ends pivotally connected to the said counterweight and means connected between the said metal strips and extending over the said operator's station.

2. An overhead guard for a lift truck having a verti-

cally disposed mast adjacent one end thereof and an operator's station in a central portion thereof, comprising a pair of flat, flexible metal strips having their one ends pivotally connected to the upper portion of the mast and their other ends pivotally connected to the opposite end of the lift truck and extending over the operator's station.

3. In an operator-driven vehicle having a vertically extending mast structure pivoted at its lower end to the front of the truck for fore and aft swinging movement of the upper end of the mast, an elongated overhead operator-protection guard which is flexible along the length thereof, means joining the front of the guard to the upper portion of the mast, and means joining the rear of the guard to the rear of the truck, said guard flexing in tension during forward swinging movement of said mast.

4. An industrial truck having a body portion, an upright load supporting mast pivotally mounted on the said body portion adjacent the lower end of the mast, load supporting means mounted for vertical movement on the said mast, an operator's compartment on the said body portion, and an overhead guard comprising a pair of flexible metal members having the one ends thereof connected to the mast and the other ends thereof connected to the body portion and extending over the operator's station, said metal members flexing during pivotal movement of said mast on said body portion.

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