United States Patent

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[54] **PROTECTIVE GUARD FOR LIFT TRUCKS**
3 Claims, 6 Drawing Figs.

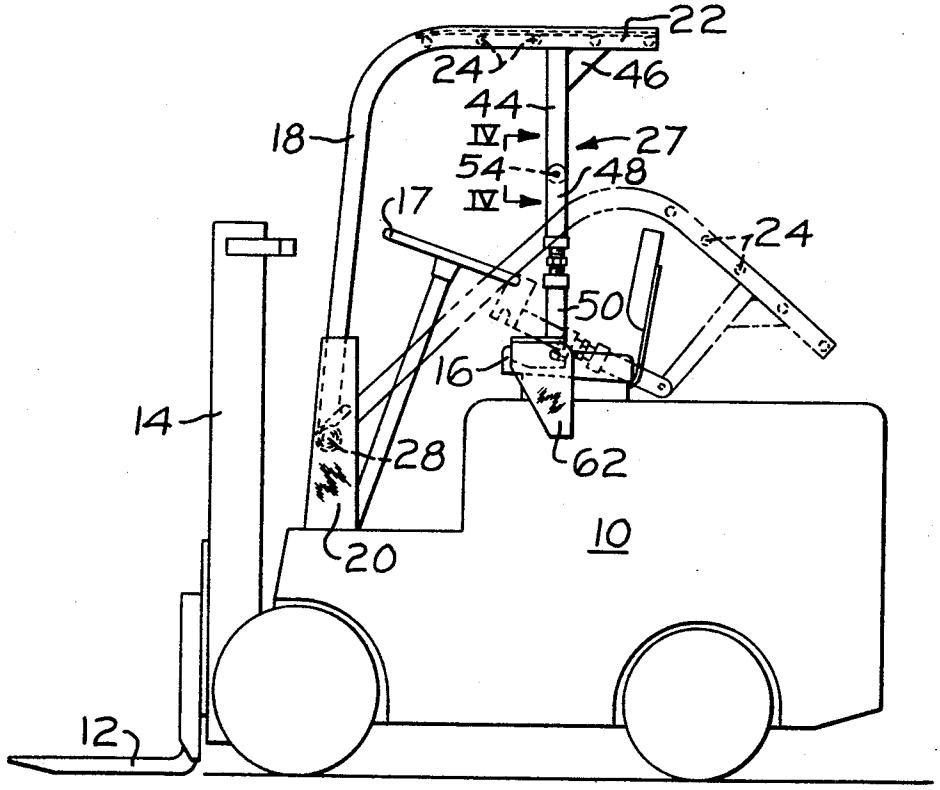
[52] **U.S. Cl.** **280/150C,** 296/102
[51] **Int. Cl.** **B60r 27/00**
[50] **Field of Search** 296/102; 280/150BC, 150

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ABSTRACT: An overhead guard for protecting the driver of a lift truck from falling objects with means to enable folding of the guard downwardly when vertical clearance is limited as by a doorway or other structures. The means for folding is constructed to enable folding with little physical effort by the operator as he sits in the operator's station and to permit the lift truck to be driven in a normal manner from the operator's station with the guard in its lowered position.

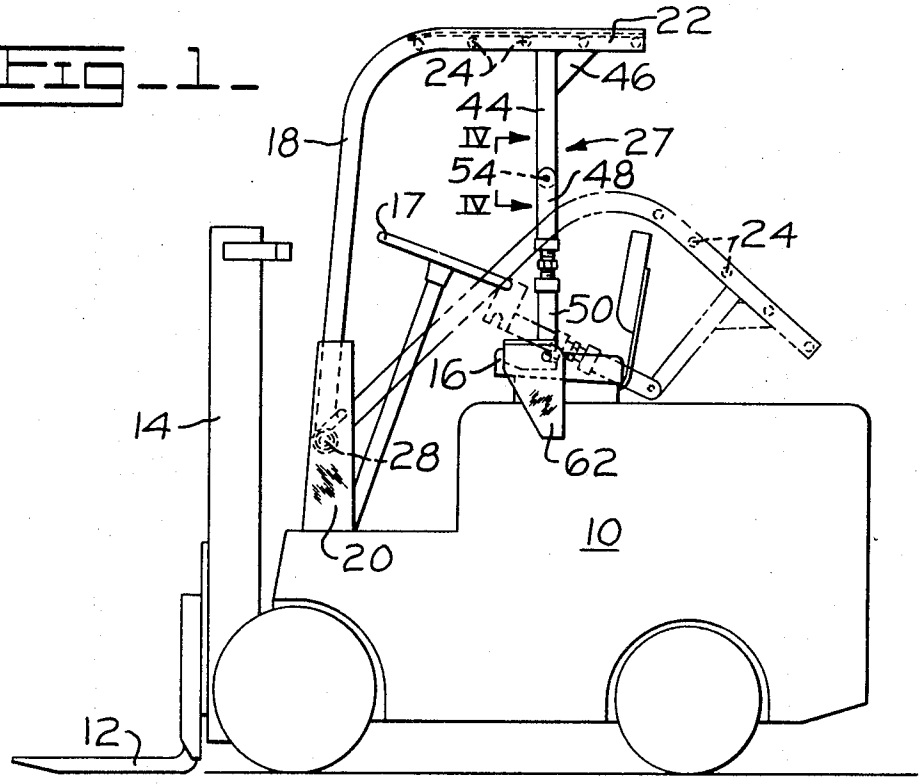


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SHEET 1 OF 2

Fig-1-



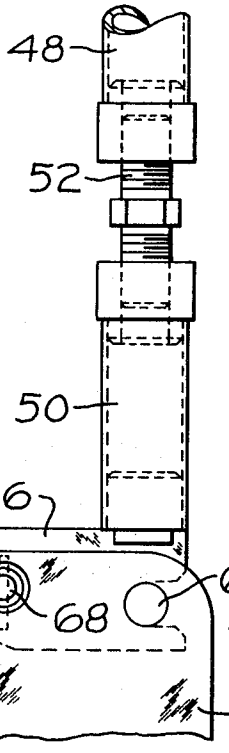


Fig-2-

Fig-3-

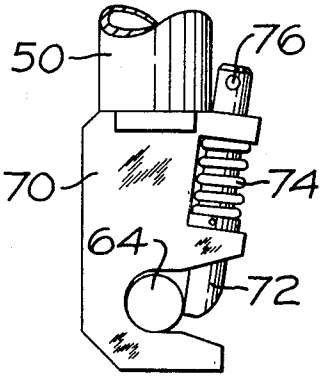
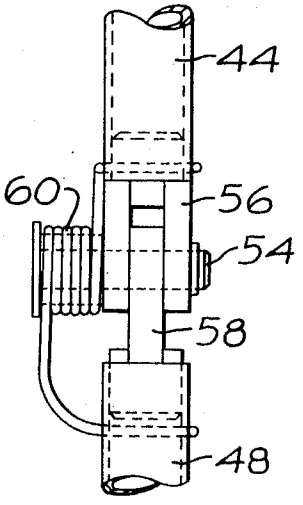


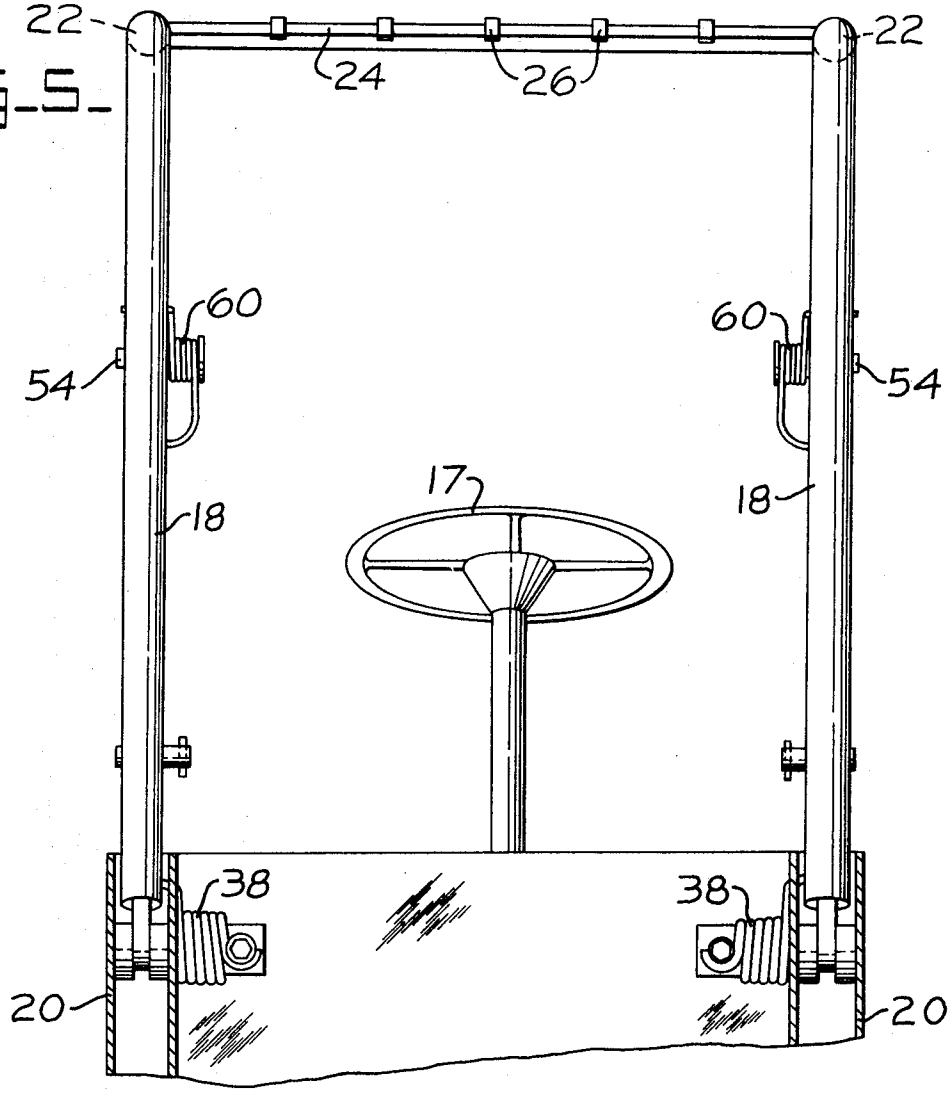
Fig-4-



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Fig. 5



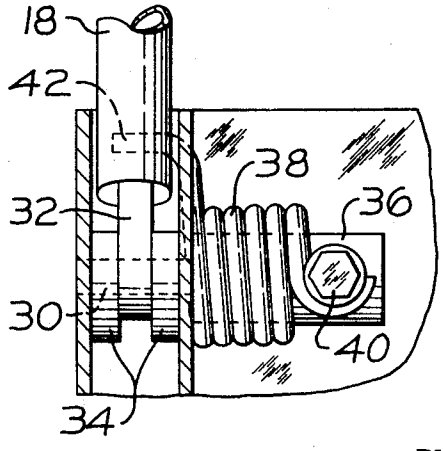


Fig. 6

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PROTECTIVE GUARD FOR LIFT TRUCKS

Fork-type lift trucks are commonly used for handling palleted material which is raised and lowered between the ground and a storage or a transport place such as stacks in a warehouse or on a truck or other carrier. Sometimes the forks are not properly engaged with the palleted load and sometimes the load being handled strikes another load or part thereof causing it to fall which is very dangerous to the operator of the lift truck whose station is generally disposed a short distance to the rear of the lift mechanism and also quite close to the stacked material with which he is working.

Guards have been devised for the protection of operators of such lift trucks and generally comprise an overhead protective structure supported by vertical posts forwardly and rearwardly of the operator station and in some cases only forwardly. To afford satisfactory protection to the operator without unduly interfering with his view of the lift mechanism and materials being handled, these guards extend upwardly some distance aBove the truck and mast of the lift mechanism which otherwise is the tallest part of the structure. Since doorways and overhead structural members in warehouses sometimes present limited vertical clearance, various arrangements have been employed to enable the protective guards to be temporarily lowered. The present invention is directed to a guard of the type described which may be lowered and particularly to such a guard which may be very conveniently and easily lowered by the operator of the vehicle while he remains in his seat. The invention is also concerned with a guard which may be lowered to present a low overall vehicle profile without interfering with the normal operation of the vehicle by the operator in his usual station.

The invention is more fully described and will be readily understood upon reading the following specification wherein reference is made to the accompanying drawings.

In the drawings:

FIG. 1 is a schematic view of a forklift truck equipped with an overhead guard embodying the present invention,

FIG. 2 is a fragmentary detail illustrating the height adjusting means and latch means employed on collapsible posts which form a portion of the guard,

FIG. 3 is a fragmentary view illustrating the detail of a modification of the latch means shown in FIG. 2;

FIG. 4 shows a hinge joint employed in collapsible posts which form a part of the guard and is taken from the line IV–IV of FIG. 1;

FIG. 5 is an enlarged view in front elevation of the guard illustrated in FIG. 1; and

FIG. 6 is a fragmentary view illustrating a hinge and spring means employed in connection with the forward posts of the guard shown in FIG. 5.

In FIG. 1 a tractor, schematically illustrated at **10**, has a forklift assembly **12** disposed forwardly thereof and actuated by power in a manner well known to move vertically with respect to a mast **14** carried by the forward portion of the tractor. An operator's seat is shown at **16** and a steering wheel at **17**. Controls for starting and stopping the tractor and for raising and lowering the forklift **12** on the mast **14** are conventional and not illustrated. The overhead protective guard of the present invention comprises a pair of forwardly disposed substantially vertical posts **18** (See also FIG. **5**), the lower ends of which are supported with respect to a pair of spaced vertical stanchions **20** disposed just forwardly of the steering wheel of the tractor. At their upper ends the posts **18** are curved rearwardly and terminate in substantially horizontal spaced roof beams **22**. A protective network is provided over the operator's station by transverse members shown at **24** extending between the members **22** and spaced longitudinal bars **26** (FIG. **5**) resting upon and preferably welded to the transverse members **24**. A pair of rear posts, one of which is generally indicated at **27** in FIG. **1**, extend between the underside of the top members **22** and the body of the tractor. Both the forward posts **18** and rear posts **27** are collapsible to assume a position such as that illustrated in broken lines in FIG. **1** where the protective guard has been lowered and extends only slightly above the top of the mast **14** of the forklift mechanism.

The forward posts **18** are pivoted as at **28** to the stanchions **20** and, as best shown in FIGS. **5** and **6**, pivot pins shown at **30** extend through a single hinge part **32** secured to and projecting from within the post **18** and opposed spaced hinge parts **34** secured to the inner walls of the stanchions which are of channel shape. An enlarged extension **36** of the hinge pin projects inwardly of the stanchion and supports a coil spring **38** which is anchored about a pin **40** at one end and extends behind the post **18** at its opposite end, as shown at **42**, to resist swinging movement of the posts **18** about their pivots **28**. The strength of the springs **38** is selected to effectively counterbalance the weight of the structure being raised and lowered so that the weight is only partially borne by the operator in making the adjustments between the raised and lowered positions.

The rear posts **27** have an upper part **44** secured to and extending downwardly from the horizontal members **22** and braced with respect thereto by a gusset **46**. The lower part of the posts are made of upper and lower portions **48** and **50** (See also FIG. **2**) connected by a stud **52** which has both right- and left-hand threaded connections with the parts to enable adjustment of the links of the posts to accommodate for irregularities in the configuration of the lift truck. The upper and lower portions of the posts **27** are connected by a pivot pin best shown at **54** in FIG. **4** which extends through a bifurcated hinge part **56** depending from the upper portion and a single hinge portion **58** carried by the lower portion. A coil spring **60** is supported by an extension of the pin **54** and has ends which bear against both of the upper and lower portions of the post to afford a counterbalancing resistance to the bending of the leg portions about their hinged connections.

The rear posts **27** are held in vertical positions and retained against hinging by latch means connecting them with the lift truck adjacent their lower ends. One form of such latch means is shown in FIG. **2** wherein a bracket **62** extending upwardly from the lift truck is illustrated as carrying a pin **64** embraced by a recess in the end of a plate **66** carried by the end of the lower portion **50** of the post. The plate **66** has a second recess registering with a recess in the bracket **62** for the reception of a removable pin **68** which normally prevent forward swinging movement of the lower portion of the post about the pivot **54** and toward the position shown in broken lines at FIG. **1** which movement makes it possible for the posts **18** to swing rearwardly about their pivots **28** and toward the lowered position of FIG. **1**. To move the guard from its raised to its lowered position, it is simply necessary for the operator to remove the pin **68** and urge the lower portions of the rear posts forwardly.

A modification of the latch mechanism shown in FIG. **2** is illustrated in FIG. **3** wherein a plate **70** of different configuration than the plate **66** in FIG. **2** depends from the lowermost end **50** of the rear post and has a notch for receiving a pin **64**. The pin **64** is retained within the notch by a latch bolt **72** urged downwardly as by a spring **74** and capable of being raised to a release position by a small handle **76** at its upper end. In this case it is only necessary for the operator to raise both of the latch bolts **72** for an instant while he urges the posts forwardly. In both modifications the latch mechanisms are disposed in convenient positions adjacent opposite sides of the operator's seat and, as shown in FIG. **1**, when the guard is lowered the foremost of the transverse members **24** is disposed behind the operator's back so that he can retain his seat and continue to operate the vehicle. With the arrangement disclosed the protective guard need only be raised to its protecting position when the operator is engaged in manipulating loads overhead.

What we claim is:

1. An overhead protective guard for a lift truck which has lift means disposed forwardly of an operator's station comprising a pair of spaced vertical posts hinged to the truck between the lift means and operator's station and having beams extending rearwardly from their upper ends, a second pair of spaced

posts adjacent the operator's station each supporting one of said beams and hinges intermediate the ends of the second pair of posts and latch means at their lower ends to enable their lower portions to swing forwardly when said latch means are released and so as to enable the first pair of posts to swing rearwardly and downwardly to reduce the height of the guard and when said latch means are latched to maintain said guard rigid.

2. The guard of claim 1 having a protective network supported by and extending between the rearwardly extending beams, and positioned to pass over the operator's head as the guard is lowered.

3. The guard of claim 1 with spring means tending to counterbalance the weight of the parts as they move about the hinge connections.