Hose Guide for Lift Truck

A pair of hoses for conveying fluid from the lift truck to a jack on the carriage are trained over the lift chains connected to the carriage and are held in the place on the lift chains as the chains and hose pass over a pair of pulleys by rollers disposed above the hoses.
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Background of the Invention

Various means have heretofore been suggested for carrying the hoses that are employed to control operation of a hydraulic jack on the carriage of the lift truck or with the chains employed to raise and lower the carriage on mast uprights. Several of these prior art devices are shown in previously issued U.S. Pat. Nos. 2,432,411, 3,062,325, 2,513,928, 2,582,999, 2,622,751, 3,111,856 and 2,677,475. The aforementioned prior art devices have met with varying degrees of acceptance. Some have required greater lateral space than desired, thus interfering with operator visibility through the mast. Some prior art constructions have been too expensive. Some have included means fastening the hose to the chain, thereby making replacement of the hose or associated chain a time consuming, and thus, expensive matter. Some prior art devices rely upon upstanding flanges on the chain links to keep the hose trained over the chain and in such constructions it has been found that, under certain conditions, the hoses become separated from the chain with the result that it must be repositioned by the operator, and if not noticed, may become damaged during operation.

Brief Description of the Invention

A pair of rollers are positioned above a pulley over which a hose and chain are trained so as to keep the hose between the side bars of the chain as the hose and chain pass over the pulley. Thus, if the operator, for instance, lowers the carriage with the forks resting on a platform or the like, the chain will become slack and the hose would, unless otherwise restrained, most likely disengage itself from its position between the side bars of the chain. The present invention prevents such separation in the area where the hose and chain pass over the pulleys. Thus, on returning the lift truck to normal operation, wherein the chain is taut, the hose will again resume its proper overlying position on the chain.

Brief Description of the Drawings

FIG. 1 is a side view of the lift truck in which the present invention is incorporated;
FIG. 2 is an enlarged view taken along the lines II—II in FIG. 1; and
FIG. 3 is a side view of the structure shown in FIG. 2.

Detailed Description of the Invention

Referring to the drawings, the motorized lift truck 11 includes a pair of rear steer wheels 12, a pair of front drive wheels 13, an operator station 14 and a mast 16 pivotally mounted on the front end of the lift truck 11 by means, not shown, for limited tilting movement. The mast 16 includes stationary uprights 17 and a pair of extensible uprights 18. A carriage 21 is mounted on the extensible uprights 18 for vertical, reciprocable movement relative thereto in a conventional manner. The carriage 21, with its load engaging forks 22, is raised and lowered by a pair of link type chains 23 which are connected at one end to the cylinder 26 of a lift jack 27, one chain being connected at an attaching point 28. The other corresponding ends of the chains are connected to the rear of the carriage 21, one chain being shown attached to a bracket 29. The lift jack 27 includes an extensible component in the form of a piston 31 to which a pair of pulleys 32 are pivotally mounted on a block 34 on the top of the piston component 31 of the single acting lift jack 27.

A pair of hydraulic hoses 41 are carried on the chains 23 in a position intermediate the side bars 43 thereof. Since the side bars extend radially outwardly a substantial distance from the connection formed by a pin 46 and a bushing 47 of each link of the chain, the hoses will tend to stay in their nested position between the side bars 43.

In the event the operator should lower the mast with the carriage on a platform or other raised object, the chains 23 will become slack and there is likelihood that the hoses would shift off their overlying position in relation to the chains, and thus become damaged or at the minimum require the operator to stop the truck and replace the hoses in their proper position. To prevent the hose from becoming dissociated from the chain as the hose and chain pass over the pulley, a pair of rollers 51 are disposed above the pulleys 32 and the hoses 41 so to gently engage the hoses so that they have any tendency to disengage from their nested position between the side bars 43 of the chains 23. The rollers 51 are made of suitable material so as to possess good wearing qualities and should be smooth so as not to injure the flexible hoses. It will be noted on reference to FIGS. 2 and 3 that the rollers 51 are pivotally secured to a U-shaped bracket 53 and have radially outwardly extending flanges 56, 57, on opposite lateral sides of an annular recess 58, which aid in maintaining the hoses 41 in their desired position between the side bars 43. The bracket 53 is secured to the block 34 on the piston 31 by a pair of cap screws 59. Although a single guide roller might be employed for each hose, it is preferred to provide two guide rollers for each hose so as to give greater assurance of maintaining the hose in its desired position on the chain.

As it will be noted on reference to the drawings, that this hose guide arrangement does not take up any additional lateral space in the lift truck mast, and thus avoids any interference with the visibility of the driver that might otherwise occur should the hose guide means be positioned as extensions of the pulleys. The hoses are held on the chain in a positive and extremely economical manner.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a lift truck having a carriage reciprocably mounted for raising and lowering on a pair of uprights by an extensible element of a lift jack, the combination comprising:
   a. a pulley rotatably mounted on said extensible element,
   b. a lift chain connected to said carriage and passing over said pulley, said chain including interconnected links with spaced side bars,
   c. a hose in overlaying contact with said chain and disposed between said spaced side bars, and
   d. a guide roller pivotally mounted on said extensible element above said pulley and engageable with said hose to maintain the latter in its position between said side bars as said chain and hose pass together over said pulley.

2. The invention of claim 1 wherein said guide roller has a smooth annular groove in contact with said hose.