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LIFT TRUCK CARRIAGE AND FORK THEREFOR

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Fig. 1.

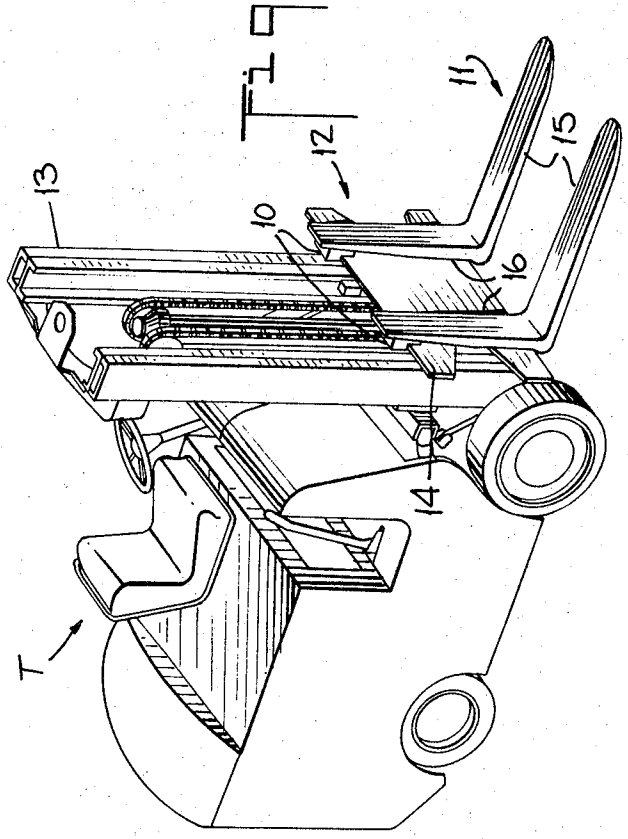

Fig. 2.

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LIFT TRUCK CARRIAGE AND FORK THEREFOR

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ABSTRACT OF THE DISCLOSURE

A load fork is mounted on the load support plate of a lift truck utilizing a hanger block that has a lower portion extending in position between the forward surface of the plate and a rear surface on the upper portion of the fork. Welds extend around the periphery of the block including its lower portion to secure the block to the fork. The rear surface of the lower block portion extends upwardly and forms the forward surface of an internal hanger notch that is considerably above the bottom line of the block, and that engages the upper edge of the support plate. A principal line of load force will pass through the rear surface of the notch and above the bottom weld. The upper portion of the fork is tapered to place its forward surface in vertical position while supported through the hanger block, and reducing the weight of the fork.

This invention relates to the mounting of a load carrying member such as a load fork to the load carriage of an industrial truck. As those skilled in the art will appreciate, many mounting devices have been designed for the purpose, and in the main, they include a hanger that is secured to the upper end of the fork or other load carrying member and that will engage over the upper horizontal edge of a vertical plate that forms a part of the load carriage.

It is customary to shape the hangers of the particular class so as to form a notch between the hanger and a surface of the load fork. It has been found extremely difficult to secure the hanger so as to yield a notch that will fit the carriage plate with sufficient accuracy. While a certain clearance may be permitted, the clearance cannot be effectively controlled when forming the hanger notch simply through the assembly of a hanger to a fork.

Welding is much to be preferred as a means for securing a hanger to a fork. Because of the very heavy loads that are applied against the hanger, it is extremely important that the welds be positioned for accepting effectively the strains and stresses to which the hanger will be subjected. Fully effective positioning of the welds is not possible with existing constructions, due to the presence of the notch between the hanger and fork.

The construction of the novel hanger that I set forth in this application is extremely simple, but it nevertheless departs radically from the prior art and yields an extremely strong and effective hanger. At the same time, it permits the forming of a notch that will coact accurately and effectively with a carriage plate, with tolerances that are accurately determined. Also, it permits a strong weld without lowering the hanger position and without obstructing the assembly of the fork to the carriage of the truck.

As a feature of my invention, I utilize to form a fork hanger a block on which are surfaces that contribute a hanger notch, and also a further surface that does not form a part of the notch and that will lie against the surface of a fork so as to position the notch relatively to the fork. As a part of this feature, that surface of the hanger block which lies against the fork is separate from the surfaces forming the hanger notch so that welding of the block to the fork will not affect the notch. Thus,

the coacting surfaces of the hanger block and fork will properly position the hanger notch, and it is possible also to form that notch with accurate tolerances.

As a more particular feature, I form a hanger block about its entire outer periphery with surfaces that will be juxtaposed to the surface of a fork, so that any part of the periphery of the hanger block, or its entire periphery as desired, may more effectively be welded to the fork. The hanger notch will be formed in an internal position which will be well above the lowermost weld securing the block to the fork. Even more particularly, the lowermost weld will be on a lower portion of the block lying in position between the fork and the forward surface of the support plate that is engaged by the hanger block. The welds then will be in a position to accept very effectively the load stresses on the hanger block, and this in itself is an important feature of my invention.

I have thus outlined rather broadly the more important features of my invention in order that the detailed description thereof that follows may be better understood, and in order that my contribution to the art may be better appreciated. There are, of course, additional features of my invention that will be described hereinafter and which will form the subject of the claim appended hereto Those skilled in the art will appreciate that the conception on which my disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of my invention.

Referring now to the drawing:

FIG. 1 shows a lift truck that utilizes the novel fork mounting of my invention.

FIG. 2 shows a side view of the mounting and fork.

For the purpose of describing my invention, I show in FIG. 1 a usual type of lift truck T on which my novel fork mounting **10** supports a pair of load forks **11**. The lift truck T is quipped with a load carriage **12** that is mounted for lifting movements on uprights **13** and that includes a substantially vertical load support plate **14** on which may be mounted various load members, as for example the forks **11**. Each fork **11** that I show has an L-shape comprising a part **15** that extends forwardly for engaging a load, and a vertical part **16** that is applied to the load support plate **14** on the carriage. My novel mounting **10** will hang each fork **11** on the upper edge of support plate **14**, utilizing the much improved construction that I shall describe. The fork **11** also will bear against a lower portion of plate **14** where it will be held by a clip **16***a* against reverse pressures, as will be understood.

Referring to FIG. 2, the novel mounting **10** of my invention comprises a hanger block **17** that is applied with its forward surface against an upper portion of a rear surface **18** of the fork **11**. I form the block **17** with a lower portion **19** that contributes a part of the forward block surface, and that will lie between the rear surface **18** of fork **11** and the forward surface **20** of load support plate **14**.

The lower block portion **19** has a rear surface **21** that I form to extend upwardly to a point within the hanger block **17**, and that contributes the forward surface of a hanger notch indicated generally by the numeral **22**. That notch **22** has an upper end surface **23**, and an inclined rear surface **24** extending from surface **23** downwardly and terminating at a point which is considerably above the bottom line of hanger block **17**. I prefer to form block **17** with a surface **25** that extends from the terminating point of the inclined notch surface **24** in a rearward direction. The upper edge of the load support plate **14** has a surface **26** which is inclined so as to coact with the inclined notch surface **24**, and I prefer to shape the plate edge to coact also with surface **25**.

To explain the securing of the hanger block **17** to

fork **11**, I shall first recall the fact that the forward surface of my hanger block **17** does not form a part of the hanger notch **22**. Thus, notch **22** is an internal notch and the peripheral surfaces of block **17** can extend in juxtaposed relation to the rear surface **18** of fork **11**. Those surfaces then are fully accessible and permit the proper application of a strong and effective weld at any point around the periphery of the forward surface of block **17**. I may easily apply a weld **27** on the bottom line of hanger block **17**, that is, on lower portion **19**, as well as a top weld **28** and opposite side welds **29**, one of which side welds is seen in FIG. 2.

The bottom weld **27** in my novel fork mounting will act to extremely good effect. That is due to the fact that it is in a position that enables it to be formed through a welding operation that is efficient, and further because it will lie a considerable distance below the load bearing surfaces of the internal notch **22**. That may be better understood when it is realized that the rear notch surface **24** will accept a very large part of the stresses which are due to a load, as indicated for example by the line of force F. The line F will extend above the bottom weld **27**, reducing to a considerable extent the amount of stress through weld **27**. Actually, it may in some cases be found unnecessary to utilize welds formed around the entire periphery of hanger block **17**. Therefore, I do not wish to be limited by those welds, it merely being important to realize that my invention comprises an extremely effective weld **27** on the bottom line of a fork hanger.

When utilizing the hanger block **17** on a fork **11**, as I have described, I am able to form the fork so that those surfaces which will be presented to a load are standard, while actually improving the construction of the fork. Thus, referring again to FIG. 2, I taper the verticle part **16** of the fork so that its rear surface **18** will incline away from the load support plate **14**. Thereby I reduce the weight of the fork, as is to be desired, yet leaving the fork with material that is commensurate with the amount of stress that must be accepted at points along the vertical part **16**. I particularly do that while mounting the fork **11** so that the forward surface of its part **16** will be vertical, or in other words, in substantially parallel relation to load support plate **14**, as generally is preferred when handling loads.

I believe that those persons skilled in the art will now understand that I contribute by my invention a novel lift truck fork mounting having a very considerable value in the industry. Not only will my mounting permit more effective welding of a fork hanger, but there need be no distortion of the hanger notch due to the welding operation. Moreover, I can taper the vertical part of a load fork so as to accept the fork stresses more effectively, yet with the forward surface of that part left in a vertical position. I believe, therefore, that the merits of my invention will be fully appreciated.

I now claim:

1. In the combination including a load carriage having a substantially vertical load support plate that presents a forward surface and upper and lower edges, a load fork having a substantially vertical part formed with a rear surface that rests against the forward surface of the load support plate, and a hanger block having a forward surface secured by welding to an upper portion of said rear surface of the fork part, said hanger block formed with a vertical notch engaging the upper edge of the support plate whereby to support said load fork on the carriage, the improvement that comprises said rear surface of the fork part inclined away from said forward surface of the support plate so as to leave a space between the upper portion of said rear surface and said support plate, said hanger block formed to include a lower portion lying in said space, the forward surface of the hanger block extending on said lower portion, said welding including a weld extending on a bottom line on said lower portion of the hanger block, and a rear surface of said lower block portion extending upward on said block and forming a forward surface of said hanger notch, said fork part being tapered so as to present a forward surface that is vertical, a rear portion of said hanger block contributing a rear surface of said vertical notch and terminating in a lower end positioned a substantial distance above the bottom line on said lower block portion, so that a line of force supporting the load fork on the load support plate and extending through said rear surface of the hanger notch will lie above the bottom weld of the hanger block, and a clip welded to said load fork and engaging the lower edge of the support plate for holding said rear surface of the fork part substantially in contact with the forward surface of the load support plate.

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