Jan. 14, 1969 J. D. CARTER 3,421,642

FORK LIFT ATTACHMENT FOR A MOVABLE BUCKET

Filed Feb. 8, 1967

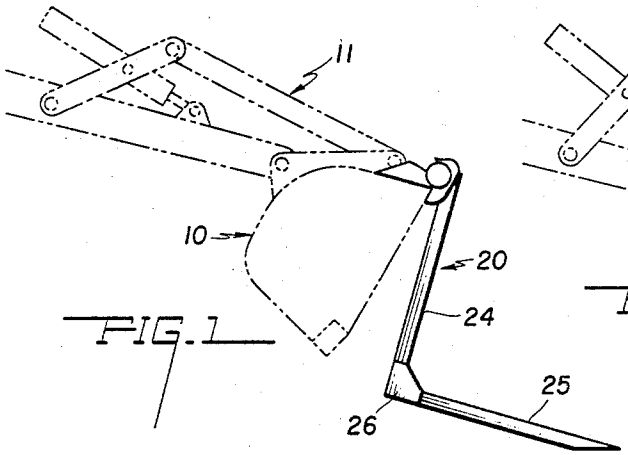


FIG. 1

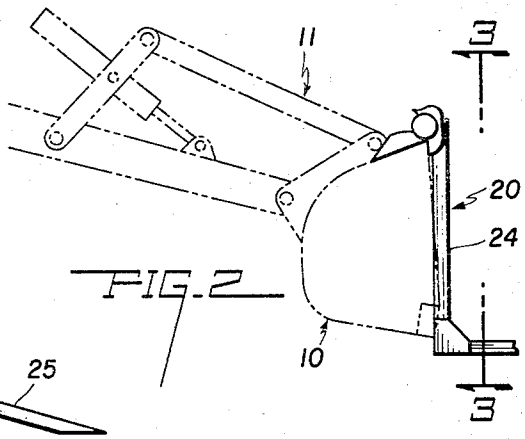


FIG. 2

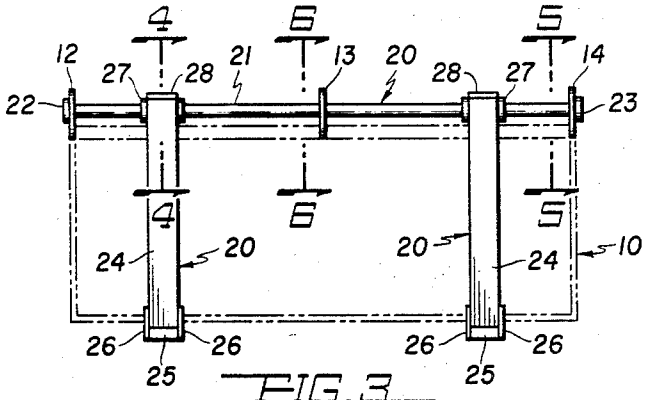


FIG. 3

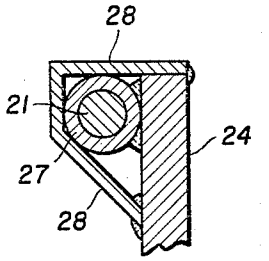


FIG. 4

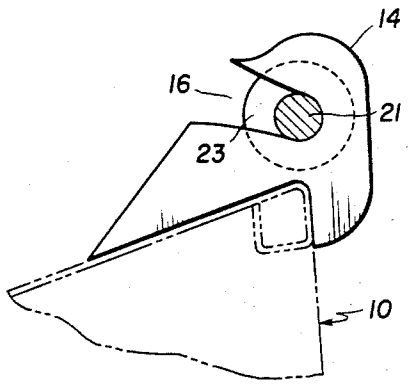


FIG. 5

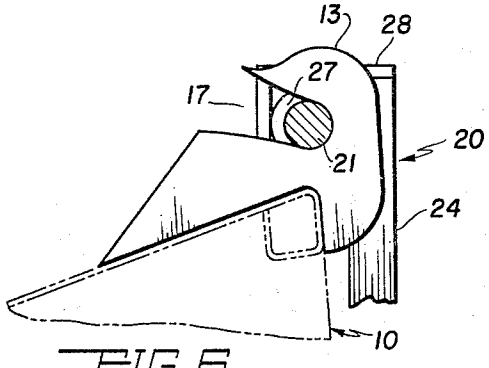


FIG. 6

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FORK LIFT ATTACHMENT FOR A MOVABLE BUCKET

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ABSTRACT OF THE DISCLOSURE

A conventional earth moving bucket is provided with hooks at its upper edge to receive a fork lift attachment. The attachment has a horizontal support which fits in and is supported by hooks, and L-shaped fork lift elements are pivotally mounted at their top on the horizontal support, with the lower part of the fork lift elements resting against the lower part of the bucket.

Background of the invention

My invention relates to a fork lift attachment, and particularly to a fork lift attachment which can be used with easily modified, conventional earth moving buckets.

Power earth moving equipment, such as front end loaders, and similar equipment, is extensively used in construction work because of its speed and economy. In the construction of a building or house for example, such equipment may be used to clear topsoil, dig a foundation, and move earth to various locations around the foundation. During this phase of construction, and subsequently, it is frequently desirable to use power equipment to unload, or move material, such as concrete blocks, which are loaded on a pallet. However, the conventional bucket on the earth moving equipment at the job site is not well adapted to handle material loaded on a pallet. Therefore, it is desirable that a fork lift attachment be provided for the bucket so that the power equipment can lift and move a pallet, which is either loaded or unloaded.

Accordingly, an object of my invention is to provide an improved fork lift attachment which can be used with a conventional earth moving bucket.

Another object of my invention is to provide an improved fork lift attachment which can be mounted on a bucket that is easily provided with suitable attachment hooks which do not interfere with the conventional use of the bucket.

Another object of my invention is to provide an improved fork lift attachment which can be mounted on and removed from hooks fastened to the bucket on a front end loader, the mounting being relatively safe and secure.

Fork lift attachments for blades and buckets have been provided. For example, United States Patent No. 2,473,505 granted June 21, 1949, shows an attachable lifting arm for bulldozer blades. While this lifting arm provides the desired fork lift, it is relatively hard and time consuming to attach these lifting arms and remove these lifting arms from the bulldozer blade.

Accordingly, another object of my invention is to provide a fork lift attachment which can be easily mounted on and removed from a conventional loader bucket.

In United States Patent No. 2,500,887 granted Mar. 14, 1950, another fork lift attachment for tractor or bulldozer blades is shown. However, this attachment may be difficult where the fork lift elements are relatively heavy, since each element must be hooked over or placed on the bulldozer blade. Further, the bulldozer blade as shown does not appear to securely hold the fork lift attachment, with the result that there is the danger of the attachment slipping or being jarred off of the bulldozer blade. Such slipping or jarring could be dangerous to personnel and could damage the material carried on the fork lift attachment.

Accordingly, another object of my invention is to provide an improved fork lift attachment which is securely held by hooks fastened to a loader bucket, but which, by itself, is an integral unit that is easily attached to and removed from the bucket by maneuvering the bucket.

Summary of the invention

Briefly, these and other objects are achieved in accordance with my invention by an attachment having an elongated horizontal support which is adapted to fit over a plurality of spaced retaining hooks. The retaining hooks are fastened to the upper portion of the movable bucket along a horizontal line and have a notch that opens toward the rear of the bucket. The hooks do not interfere with the conventional pushing, moving or hauling uses of the bucket. The elongated support has a length greater than the distance between the outer ones of the spaced retaining hooks and has a cross-sectional configuration which is adapted to be easily picked up but securely held by the retaining hooks. The ends of the horizontal support are positioned outwardly of the retaining hooks, and have projections which prevent the horizontal support from sliding off of the hooks. A plurality of fork lift elements, usually two, are pivotally mounted on the horizontal support between its ends. Each of the fork lift elements has a rigid, generally L-shaped configuration formed by a vertical portion and a horizontal portion. The upper end of each vertical portion is pivotally and slidingly mounted on the horizontal support, and the lower part of each vertical portion is dimensioned and adapted to rest against the lower forward face of the bucket. The horizontal portion of each fork lift element extends forwardly from the bucket so that each horizontal portion can lift a pallet. With a removed attachment resting on the horizontal portion of the L-shaped fork lift elements, the bucket with the hooks may be maneuvered into position so that the hooks are brought under and forward of the horizontal support. The bucket is then lifted in such a manner that the horizontal support is fitted into and rests on the inside of the notches of the hooks, with the lower part of the vertical portions of the L-shaped fork lift elements resting against the forward face of the bucket. With the attachment so mounted, it is very difficult or almost impossible for the elements or the attachment to accidentally fall from the bucket. But with the upper end of each vertical portion pivotally and slidingly mounted on the horizontal support, the L-shaped fork lift elements may be spaced apart any desired distance. Thus, the attachment is easily mounted and adjusted on the bucket, but is securely held.

Brief description of the drawing

The subject matter which I regard as my invention is particularly pointed out and distinctly claimed in the claims. The structure and operation of my invention, together with further objects and advantages, may be better understood from the following description given in connection with the accompanying drawing, in which:

FIGURE 1 shows a side elevation view of a bucket in the position of picking up the fork lift attachment in accordance with my invention;

FIGURE 2 shows a side elevation view of the bucket of FIGURE 1 with the attachment in accordance with my invention picked up and mounted;

FIGURE 3 shows a front view of the bucket of FIGURE 2 with the attachement in accordance with my invention; and

FIGURES 4, 5 and 6 show cross-sectional views taken along the lines 4—4, 5—5 and 6—6 respectively in FIGURE 3.

Description of the preferred embodiment

FIGURES 1 and 2 show side views of the forward portion of a front end loader in phantom, this front end loader comprising an earth moving bucket **10** which is suitably supported and maneuvered by a mechanism of arms and levers generally designated by the reference numeral **11**. The mechanism shown is by way of example only, as it is to be understood that other types of machinery having other types of buckets may be used with my invention. As shown in FIGURE 3, the forward upper edge or portion of the bucket **10** is provided with a plurality of support elements or hooks **12, 13, 14**. More or less support elements or hooks may be used, but I have found that for most operations, three such hooks, positioned near the outside and the center of the bucket **10** as shown in FIGURE 3, are satisfactory. The three hooks **12, 13, 14** may be fashioned from a plate of any suitable material such as steel, and are shaped in a general configuration of a hook having slots or notches **16, 17** as shown in FIGURES 5 and 6. The hooks **12, 13, 14** may be fastened to the bucket **10** in any suitable fashion, as by welding. As shown in FIGURES 5 and 6, the slots or notches **16, 17** open generally to the rear and in a slightly upward direction relative to the bucket **10** to facilitate mounting the attachment but also to securely hold the attachment.

The attachment in accordance with my invention is shown in FIGURES 1, 2 and 3 and is generally designated by the reference numeral **20**. The attachment **20** comprises an elongated, horizontal support **21** which is preferably a solid metallic rod. The horizontal support **21** has length sufficiently great to extend outwardly beyond the two outer hooks **12, 14** as shown in FIGURE 3, and may be provided with end projections **22, 23** which prevent the horizontal support **21** from slipping out of the hooks **12, 13, 14**. A plurality of generally L-shaped fork lift elements are pivotally mounted on the support **21**. Usually, I have found that two such fork lift elements are satisfactory for most jobs and operations. The fork lift elements are preferably similar, and each of these elements comprises a vertical portion **24** and a horizontal portion **25** which may be formed from a single piece of suitable material and bent, or which may be made of two pieces joined by welding. In either case, re-enforcing plates **26** may be provided at the junction of the two portions **24, 25** to provide a rigid structure. The horizontal portion **25** may be pointed as shown in FIGURE 1 to facilitate use with a pallet. The upper end of each of the vertical portions **24** is provided with a sleeve **27** which may be attached to the upper end of the vertical portion **24** by welding or other means, as shown in FIGURES 3 and 4. The sleeve **27** is re-enforced by an angle iron **28** which passes over the top of the sleeve **27** and vertical portion **24**, down behind the sleeve **27**, and down and forward to the rear of the vertical portion **24**. The angle iron **28** may be welded at suitable points as shown in FIGURE 4. The sleeve **27** has an internal diameter which is slightly greater than the external diameter of the horizontal support **21**, so that the fork lift elements may pivot or swing about the support **21** and may also slide along the support **21**. It will thus be seen that the attachment **20** comprises a horizontal support **21** from which one or more fork lift elements is pivoted or swung by means of the sleeve **27**. The fork lift elements may be slid along the support **21** to provide any desired location and spacing for them.

When the attachment **20** is not in use, it normally rests on its horizontal portions **25** with its vertical portions **24** extending upward. This places the horizontal support **21** above the ground or platform on which the attachment **20** is resting so that the bucket **10** can be maneuvered into position with its upper edge tilted forward as shown in FIGURE 1. The hooks **12, 13, 14** on the bucket **10** are passed beneath the horizontal support **21**, and the bucket **10** is then raised so that the notches **16, 17** in the hooks **12, 13, 14** will engage the support **21**. The bucket **10** is then tilted backward and moved upward so that the horizontal support **21** slides into the notches **16, 17** and is carried upward by the hooks **12, 13, 14**. The bucket **10** is also rotated or maneuvered so that its forward face is substantially vertical as shown in FIGURE 2. This provides lower and rear support for the vertical portions **24**, and maintains the fork lift elements in the desired position as shown in FIGURE 2. Thereafter, the bucket **10** with the attachment **20** may be maneuvered to any desired position where a pallet or other similar object can be picked up and carried by suitable operation of the bucket **10** and the mechanism **11**. The attachment **20** may be removed by lowering the bucket **10** so that the horizontal portions **25** rest on the ground or a platform, and the bucket **10** tilted forward and moved until the hooks disengage from the horizontal support **21**. Then, the bucket **10** may be lowered and withdrawn, to leave the attachment **20** in position and with the bucket **10** free for other uses.

It will thus be seen that the attachment **20** may be easily mounted on a bucket by providing the bucket with suitable hooks for holding the horizontal support of the attachment. Despite the relatively easy mounting and removal of the attachment **20**, the attachment **20** is securely held once it is mounted because of the configuration of the hooks and because of the projections on the ends of the horizontal support **21**. The attachment **20** is very safe, and permits the spacing of the fork lift elements to be adjusted over a wide range. Persons skilled in the art will appreciate that modifications may be made. For example, the center hook **13** may be omitted, or additional hooks may be attached to the bucket for additional support and safety. Likewise, additional fork lift elements may be mounted on the horizontal support **21**. The length of the vertical portion **24** of the fork lift element may be varied to suit particular needs. However, in most cases, it is desirable that the vertical portion **24** extend below the bucket so that it receives solid support at its lower rear, and thus prevent the fork lift elements from pivoting. And finally, the attachment can be used on different bucket configurations in addition to the bucket shown in the drawing. Therefore, while my invention has been described with reference to a particular embodiment, it is to be understood that modifications may be made without departing from the spirit of the invention or from the scope of the claims.

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

1. An attachment for use with a movable bucket or the like having a plurality of substantially similar, spaced retaining hooks, each of said hooks forming a notch having an opening and each of said hooks being fastened to an upper portion of said movable bucket with said notch openings facing the rear of said movable bucket along a substantially horizontal line, said attachment comprising:

(a) an elongated horizontal support having a length greater than the distance between the outer ones of said spaced retaining hooks, said horizontal support having a cross-sectional configuration adapted to be easily picked up but securely held in said notches of said retaining hooks with the ends of said horizontal support positioned outwardly of said outer spaced retaining hooks respectively; and

(b) first and second fork lift elements pivotally mounted on said horizontal support, each of said fork lift elements having a rigid, generally L-shaped configuration formed by a vertical portion and a horizontal portion, the upper end of said vertical portion being pivotally and slidingly mounted on said horizontal support with the lower part of said vertical portion adapted to rest against the forward face of said bucket and with the horizontal portion extending forwardly from said bucket with the end of said horizontal portion spaced from said bucket.

2. The attachment of claim 1 wherein said ends of said horizontal support have projections that prevent said ends of said horizontal support from sliding inwardly of said outer spaced retaining hooks.

3. The attachment of claim 1 wherein said cross-sectional configuration of said horizontal support is substantially cylindrical, and wherein said pivotal mounting for said upper end of said vertical portion comprises a sleeve having a cylindrical opening for admitting said horizontal support.

4. The attachment of claim 3 wherein said ends of said horizontal support have projections that prevent said ends of said horizontal support from sliding inwardly of said outer spaced retaining hooks.

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U.S. Cl. X.R.

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