United States Patent

Westendorf

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[54] **FORK ATTACHMENT FOR A LOADER BUCKET**

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[52] **U.S. Cl.** .....**214/145,** 37/142 R
[51] **Int. Cl.** **B66f 9/12**
[58] **Field of Search**.....214/131, 145, 750, 620; 37/142 R

[56] **References Cited**

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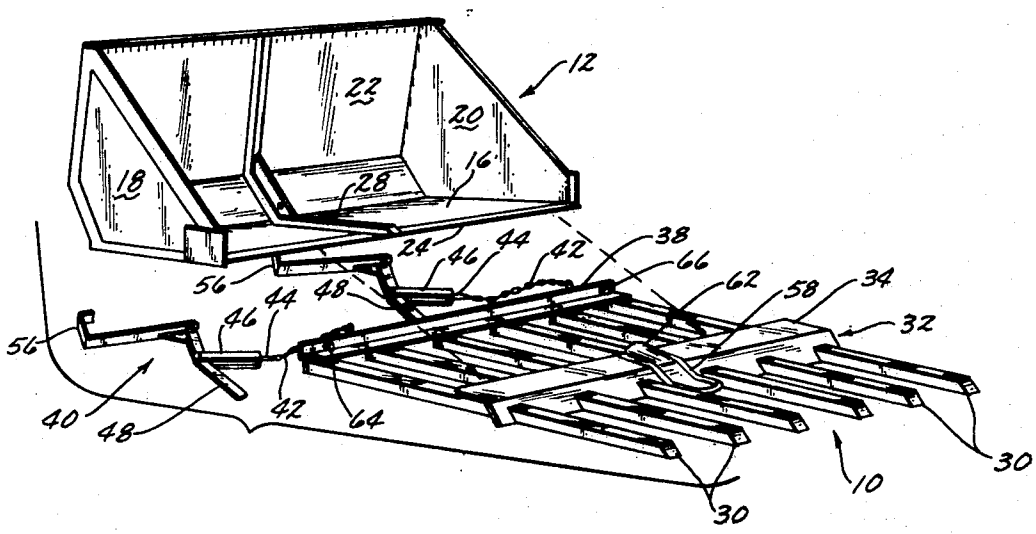
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[57] **ABSTRACT**

A fork attachment for a loader bucket comprising a plurality of spaced apart teeth having a transverse plate means secured thereto rearwardly of the forward ends thereof. The plate means includes a rearwardly extending plate portion which is spaced above the teeth. An elongated angle member is secured to the rearward ends of the teeth and has a pair of chain tightener elements secured thereto. The attachment is secured to the loader bucket by driving the loader forwardly so that the leading edge of the bucket bottom is received beneath the plate portion to secure the forward end of the bucket to the attachment. The chain tightener elements are then secured to the upper rearward portion of the loader bucket to secure the rearward end of the attachment to the bucket.

Material handling devices such as front-end loaders, tractor loaders, etc., generally have a pair of pivotal booms provided thereon to which various attachments are secured. Many tractor loaders are used by ranchers and farmers to handle material such as dirt, gravel, etc. A bucket attachment is secured to the booms when the loader is being used for dirt, gravel, and similar materials. It is necessary to replace the bucket attachment with a fork attachment when materials such as manure, ensilage and the like are going to be handled since the conventional bucket attachment cannot adequately handle the material. The replacement of the fork attachment for the bucket attachment is time consuming and requires that a separate fork attachment be purchased even though the fork and bucket attachments are somewhat similar in design.

6 Claims, 6 Drawing Figures



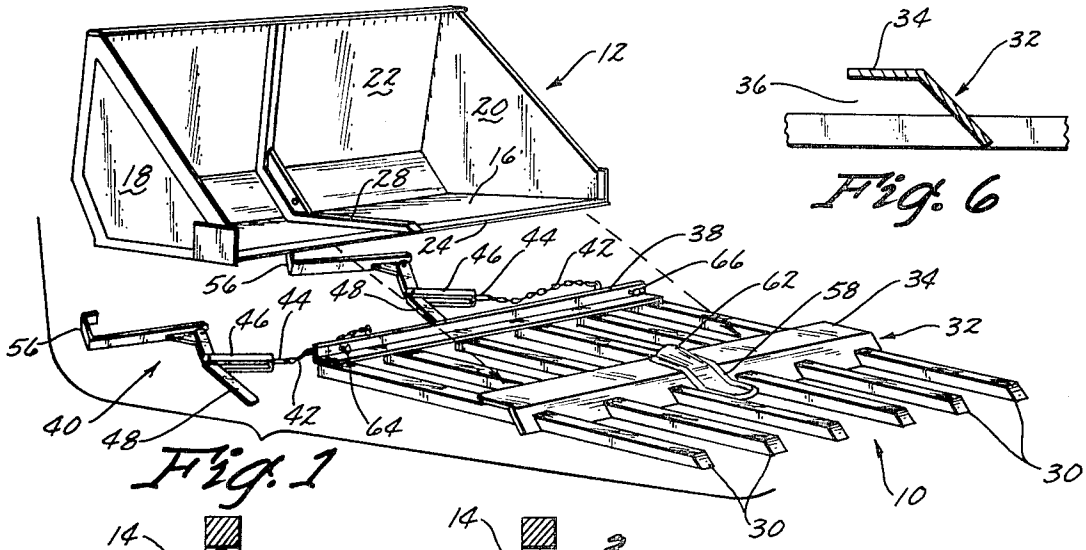


Fig. 1

Fig. 6

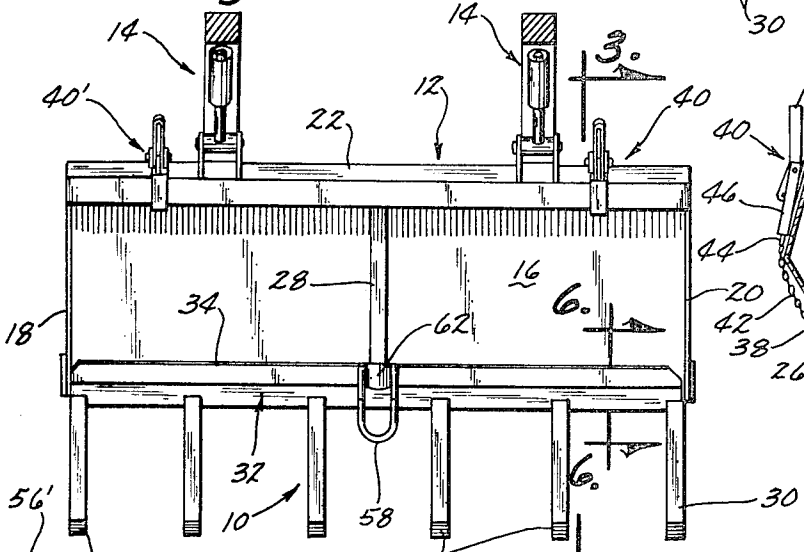


Fig. 2

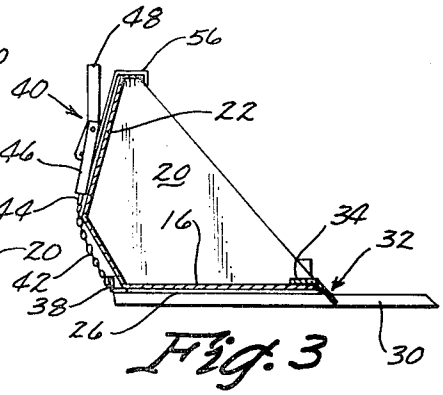


Fig. 3

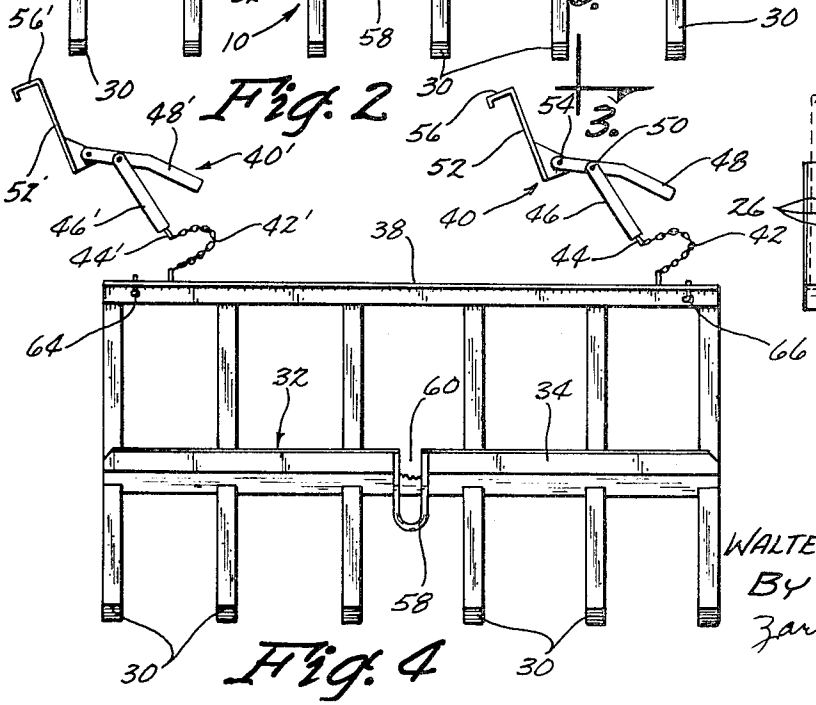


Fig. 4

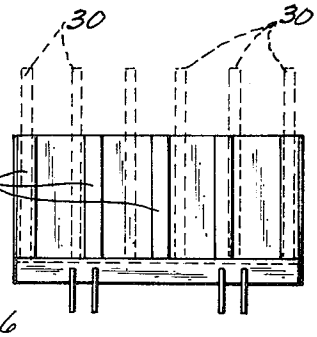


Fig. 5

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FORK ATTACHMENT FOR A LOADER BUCKET

Therefore, it is a principal object of this invention to provide an attachment for a loader bucket and more specifically a fork attachment for a loader bucket.

A further object of this invention is to provide a fork attachment for a loader bucket which is conveniently and quickly secured to the loader bucket.

A further object of this invention is to provide a fork attachment for a loader bucket which is rigidly mountable on the bucket.

A further object of this invention is to provide a fork attachment for loader buckets which is economical.

A further object of this invention is to provide a fork attachment for loader buckets which is self-cleaning.

A further object of this invention is to provide a fork attachment for a loader bucket having means thereon for compensating for wear of the attachment.

A further object of this invention is to provide a fork attachment for a loader bucket which is economical of manufacture, durable in use and refined in appearance.

These and other objects will be apparent to those skilled in the art.

This invention consists in the construction, arrangements and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view of the attachment and the loader bucket to which it is secured;

FIG. 2 is a top view of the attachment on a loader bucket;

FIG. 3 is a sectional view seen along lines 3—3 of FIG. 2; and

FIG. 4 is a top view of the attachment.

FIG. 5 is a bottom view of the loader bucket with the attachment being shown in broken lines.

FIG. 6 is a sectional view seen on lines 6—6 of FIG. 2.

The fork attachment of this invention is referred to generally by the reference numeral **10** while the numeral **12** refers to a conventional loader bucket which is pivotally mounted on a boom means **14**. The attachment **10** is ideally suited for tractor loaders, front-end loaders, etc. The tractor loader disclosed in U.S. Letters Pat. No. 3,324,954 is one type of loader device which is well suited for use with this attachment.

The bucket **12** comprises a bottom wall **16**, side walls **18** and **20** and rear wall **22**. Bottom wall **16** includes a leading edge **24** and a plurality of spaced apart runner bars **26** provided on its underside. Bucket **12** also includes a center stiffener rib means **28**.

Attachment **10** comprises a plurality of spaced apart teeth **30** which are preferably constructed of one and one-quarter inch square axle steel. A transversely disposed plate means **32** is secured to the teeth **30** as seen in FIG. **1** rearwardly of the forward ends thereof and includes a rearwardly extending plate portion **34** which is spaced above the teeth **30** to define a channel area **36**. An elongated angle member **38** is secured to the rearward ends of the teeth **30** by welding. A pair of connector means **40** and **40'** are secured to angle member **30** adjacent the opposite ends thereof. Inasmuch as connector means **40** and **40'** are identical, only connector means **40** will be described in detail

with "'" designating identical structure on connector means **40'**. Connector means **40** comprises a chain **42** welded at one end to angle member **38** and having an adjustment bolt assembly **44** at its other end. A U-shaped bracket **46** is threadably adjustably secured at its base portion to bolt assembly **44**. Bracket **46** is pivotally secured to lever **48** by pin **50**. Lever **48** is pivotally connected to the lower end of clamp **52** by pin **54**. Clamp **52** includes a hook portion **56** which is adapted to be extended over the upper end of rear wall **22**. The relationship of bracket **46**, pin **54**, lever **48** and pin **50** is such that the lever **48** yieldably remains in a locked position commonly described as a "toggle" action.

A hook element **58** is secured to plate means adjacent opening **60** formed therein. Housing **62** extends over opening **60** and receives the forward end of stiffener rib means **28** to reinforce the plate means **32** in the vicinity of the opening **60**. The hook element **58** provides a means for attaching a chair or the like thereto for removing the attachment from the loader if the attachment should become wedged thereon for some reason.

The attachment is mounted on the loader bucket by driving the loader forwardly with respect to the attachment which may be lying on the ground or other suitable supporting surface. The loader bucket is manipulated so that the leading edge **24** of bottom wall **16** is received in the channel area **36**. Hook portions **56** and **56'** of the connector means **40** and **40'** are then placed over the upper portion of the rear wall **22**. The levers **48** and **48'** are then moved from their open position to their closed position which causes the chains **42** and **42'** to pull the rearward ends of the teeth upwardly into engagement with the underside of the bottom wall **16**. When the levers are in their locked position, the rearward ends of the teeth are prevented from undesirable movement so that a rigid connection is achieved between the teeth and the loader bucket. The relationship between the leading edge **24** and the plate portion **34** is such that the leading edge **24** is wedged into the channel area **36** to prevent undesirable movement of the teeth with respect to the loader bucket and to provide a rigid means of connecting the teeth to the forward end of the bucket. The teeth **30** engage the runner bars **26** to further provide a rigid connection between the loader bucket and the attachment **10**. The adjustable bolt assemblies **44** and **44'** can be adjusted to compensate for attachment wear so that the attachment will always be rigidly secured to the loader bucket. The set screws **64** and **66** may be threadably moved into engagement with the back of the bucket to compensate for wear on the components as required.

The attachment **10** of this invention is relatively inexpensive to build and permits a conventional loader bucket to be quickly and easily converted to a loader fork. The design of the attachment is such that the interior of the loader bucket remains clear of material upon the loader bucket being operated to its dumped position. The teeth **30** add additional strength to the loader bucket due to the relationship of the teeth **30** and the runner bars **26**. Thus it can be seen that a novel fork attachment has been provided for use with a loader bucket which is quickly and easily attached to the loader bucket to permit the loader bucket to be

used as a loader fork. Thus it can be seen that the invention accomplishes at least all of its stated objectives.

I claim:

1. In combination with a material handling apparatus having a bucket means at the forward end thereof, said bucket means having rearward and forward end, a bottom wall, and a back wall having an upper end,

a fork attachment for the bucket means comprising a plurality of spaced apart elongated teeth having forward and rearward ends, means secured to said teeth for maintaining said teeth in said spaced apart relationship, a support means secured to said teeth rearwardly of the forward ends thereof and having means thereon adapted to removably receive the forward end of said bucket means, a portion of said teeth extending beneath the bottom wall of the bucket means when the attachment is mounted on the bucket means, and connection means selectively connecting said teeth adjacent the rearward end thereof to the bucket means adjacent the rearward end thereof, said support means limiting the rearward movement of the attachment when said connection means is selectively connected to said bucket means, said support means also limiting vertical movement of said attachment with respect to said bucket means when said connection means is selectively connected to said bucket means, said support means comprising an elongated plate means secured to said teeth and having a rearwardly extending plate portion disposed above said teeth defining an elongated channel, the forward end of said bucket means being received in said channel.

2. In combination with a material handling apparatus having a bucket means at the forward end thereof, said bucket means having rearward and forward end, a bottom wall, and a back wall having an upper end,

a fork attachment for the bucket means comprising a plurality of spaced apart elongated teeth having forward and rearward ends, means secured to said teeth for maintaining said teeth in said spaced apart relationship, a support means secured to said teeth rearwardly of the forward ends thereof and having means thereon adapted to removably receive the forward end of said bucket means, a portion of said teeth extending beneath the bottom wall of the bucket means when the attachment is mounted on the bucket means, and connection means selectively connecting said teeth adjacent the rearward end thereof to the bucket means adjacent the rearward end thereof, said support means limiting the rearward movement of the attachment when said connection means is selectively connected to said bucket means, said support means also limiting vertical movement of said attachment with respect to said bucket means when said connection means is selectively connected to said bucket means, said support means comprising an elongated plate means secured to said teeth and having a first plate portion extending upwardly and rearwardly therefrom and a second plate portion extending rearwardly from the upper end of said first plate portion, said first and second plate portions defining a channel between said plate portions and said teeth which receives the forward end of said bucket means.

3. The combination of claim 2 wherein said plate means has a length substantially equal to the width of the forward end of said bucket means.

4. In combination with a material handling apparatus having a bucket means at the forward end thereof, said bucket means having rearward and forward end, a bottom wall, and a back wall having an upper end,

a fork attachment for the bucket means comprising a plurality of spaced apart elongated teeth having forward and rearward ends, means secured to said elongated teeth having forward and rearward ends, a support plate means secured to said teeth rearwardly of the forward ends thereof for maintaining said teeth in said spaced apart relationship and for removably receiving the forward end of said bucket means, a portion of said teeth extending beneath the bottom wall of the bucket means when the attachment is mounted on the bucket means, and connection means selectively connecting said teeth adjacent the rearward end thereof to the bucket means adjacent the rearward end thereof,

said support plate means limiting the rearward movement of the attachment when said connection means is selectively connected to said bucket means, said support plate means also limiting vertical movement of said attachment with respect to said bucket means when said connection means is selectively connected to said bucket means, said support plate means having a length substantially equal to the width of the forward end of said bucket means.

5. The combination of claim 4 wherein said connection means comprises at least one chain means secured at one end of said teeth at the rearward ends thereof, a chain tightening means connected to the other end of said chain means adapted to be secured to said bucket means adjacent the upper end of said back wall so that said chain means is closely positioned the rearward side of said back wall, said chain tightening means adapted to limit the movement of the rearward ends of said teeth by drawing the rearward ends of said teeth upwardly into operative engagement with said bucket means.

6. The combination of claim 5 wherein said connection means has adjustment means to permit the connection means to compensate for relative wear of the attachment and bucket means.

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