

March 2, 1948.

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2,437,010

SHOVEL LOADER

Filed Dec. 29, 1945

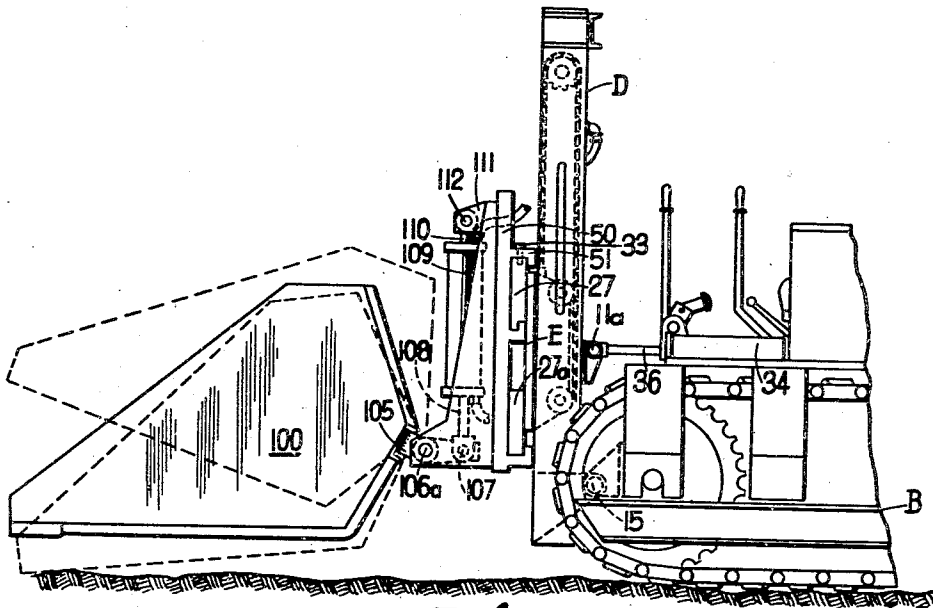


Fig. 1

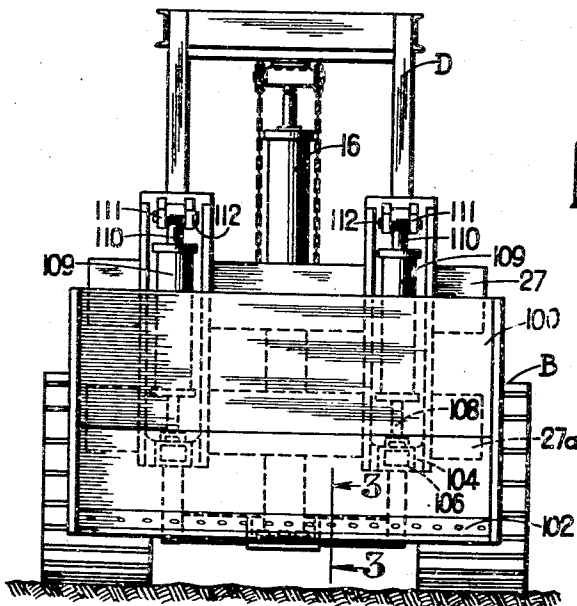


Fig. 2

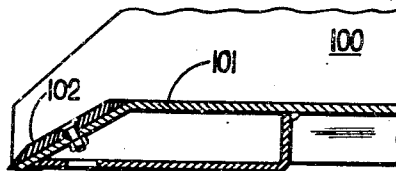


Fig. 3

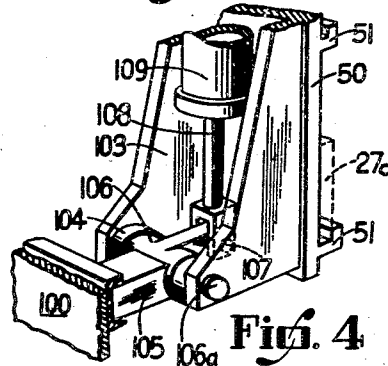


Fig. 4

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2,437,010

SHOVEL LOADER

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Application December 29, 1945, Serial No. 638,244

4 Claims. (Cl. 214-113)

1 My invention relates to a shovel loader. It has to do, more particularly, with a shovel loader attachment for an industrial truck of the track laying type. More specifically, the present invention has to do with the application to a vehicle of the foregoing character of a scoop or shovel unit.

This application is a continuation in part of my copending application, Serial No. 571,339, filed January 4, 1945, now Patent No. 2,421,472, granted June 3, 1947.

In my copending application, I disclose a scoop or bucket attachment for a vehicle of the type indicated. This scoop attachment is attached to the vertically movable lift provided at the forward side of the tractor. The lift is not only capable of being raised and lowered but of being tilted forwardly or rearwardly into various predetermined positions. Thus, the scoop carried by the lift will also be moved vertically or tilted with the lift. In addition, as disclosed in the copending application, the scoop is pivoted to the lift at its rear edge and can be tilted forwardly about a horizontal transverse pivot axis relative to the lift. Latch means is provided for normally maintaining the scoop substantially at right angles to the lift, but this latch means can be released to permit forward tilting of the scoop for dumping. To return the scoop to its normal position at right angles to the lift, it is necessary to lower the lift until the bottom of the scoop touches the ground and then to continue the lowering movement thereby causing the scoop to swing upwardly around its pivot axis until it is again engaged by the retaining latch.

The object of this invention is to provide means for smoothly and positively moving the scoop about said horizontal pivot axes and for rigidly holding it in any tilted position about said axis substantially independent of the position of the lift.

The foregoing and other objects and advantages of the present invention will appear from the following description and appended claims when considered in connection with the accompanying drawing forming a part of the specification wherein like reference characters designate corresponding parts in the several views and wherein:

Figure 1 is a side elevational view of a vehicle with my scoop attachment, showing by dotted lines various positions of the scoop.

Figure 2 is a front elevational view of the structure of Figure 1.

Figure 3 is a sectional view through the for-

2 ward edge of the bottom of the scoop and taken substantially along line 3-3 of Figure 2.

Figure 4 is a detail, in perspective, of one of the scoop pivot structures.

Before explaining in detail the present invention, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways. It is to be understood also that the phraseology or terminology employed herein is for the purpose of description and not of limitation, and it is not intended to limit the invention herein claimed beyond the requirements of the prior art.

In the drawings, I disclose an industrial truck or tractor lift which in its general structure is the same as that disclosed in my copending application. It includes the lift frame D which is provided with portions which are vertically adjustable and the entire frame is capable of being tilted forwardly or rearwardly with relation to the main frame B about the horizontal pivot axis 15. Movement of the frame D about the pivot 15 is controlled by horizontally disposed hydraulic cylinders 34 which actuate piston rods 33 that are pivotally connected, as at 11a, to the frame D. The scoop supporting frame consists of two upright members 50 having rearwardly extending brackets 51 which embrace the cross bars or track bars 27 and 27a of the lift E. The brackets 51 are so shaped and arranged that the members 50 may be slipped laterally on and off the track bars 27 and 27a. They will be held in position by the bolts 33 which pass through the upper brackets 51 and which cooperate with selected openings of series provided in the upper edge of member 27. The lift E is vertically movable by means of the hydraulic cylinder 16 which is carried by frame D and is operatively connected to the lift E. The structure thus far described is disclosed in my copending application.

The scoop 100, in this instance, is of different construction and is mounted in a different manner from that disclosed in my copending case. The scoop 100 is preferably made as a welded composite unit and includes the double forward bottom portion 101 which has an inclined forward edge. This edge carries a removable wear bar or cutting bar 102.

The members 50, in this instance, are different from those disclosed in my copending case and each is provided with a pair of forwardly projecting vertically disposed flanges or ribs 103

which are disposed at the side edges thereof. Each of these flanges 103 is provided with a forwardly projecting lug extension 104 on its lower end.

The scoop has rigidly secured to the rear wall thereof, adjacent its side edges, the rearwardly projecting rocker arms 105. Each of these arms extends between the pair of lugs 104 and carries an integral spacer sleeve 106. A pivot pin 106a passes through the sleeve 106 and is secured in aligning openings formed in the lugs 104. Each of the arms 105 projects rearwardly between the flanges 103 and its rear end is pivotally connected, as at 107, to the lower end of a piston rod 108. The rod 108 projects downwardly from a vertically disposed hydraulic cylinder 109. The cylinder 109 has a hanger rod 110 extending from its upper end and pivoted between a pair of forwardly projecting lugs 111 by means of a transverse pivot pin 112. A suitable control is provided for controlling the flow of hydraulic fluid to and from cylinder 109. This control will actuate both cylinders 109 simultaneously.

It will be apparent that when cylinders 109 are actuated, the rods 108 will be moved vertically and will rock the arms 105 about the pivots 106a. This will rock the scoop in a horizontal plane. By controlling the supply of fluid to cylinders 109, the scoop may be adjusted to any angular position about pivots 106a and will be held firmly in such position. These movements, in combination with the vertical and tilting movements of the lift, make it possible to move the scoop through the various paths and adjust it to the various angles necessary for scooping up material, loading it into a vehicle, or moving it to other points and dumping it. The various movements and the dumping action can be accomplished smoothly and efficiently.

It will be apparent from the above description that the scoop attachment which I have provided for an industrial truck of the type indicated is of a novel structure and has a number of advantages.

Having thus described my invention, what I claim is:

1. A scoop attachment for an industrial truck which includes a chassis carrying an upright standard having a lift carriage mounted thereon for vertical movement, comprising a vertically disposed supporting frame adapted to be attached to the carriage, said frame including a plurality of vertically spaced transversely extending cross bars, a plurality of vertically disposed supports having channel-shaped bracket portions at their rear sides which slip over the ends of said cross bars, means for securing said vertically disposed supports in selected positions laterally of said cross bars, each of said vertical supports being provided with forwardly projecting vertically disposed laterally spaced ribs having forwardly projecting pivot lugs on their lower ends, a forwardly directed scoop carried by said frame for movement about a horizontal axis, rocker arms rigidly attached to said scoop and extending rearwardly therefrom, said rocker arms extending between said ribs on said vertical supports, pivot pins extending through pivot openings in said lugs and through cooperating openings formed in said rocker arms intermediate their ends, means for controlling movement of the scoop about said pivot pins, said means comprising a vertically disposed fluid cylinder and piston unit carried by each of said vertical supports between the ribs formed thereon, hanger means for pivotally sus-

pending the upper end of each of said units from the upper end of the associated support, and means for pivotally connecting the lower end of said fluid unit to the rear end of the associated rocker arm.

2. A scoop attachment for an industrial truck which includes a chassis carrying an upright standard having a lift carriage mounted thereon for vertical movement, comprising a vertically disposed supporting frame adapted to be attached to the carriage, said frame including a plurality of vertically spaced transversely extending cross bars, a plurality of vertically disposed supports having channel-shaped bracket portions at their rear sides which slip over the ends of said cross bars, each of said vertical supports being provided with forwardly projecting vertically disposed laterally spaced ribs, a forwardly directed scoop carried by said frame for movement about a horizontal axis, rocker arms rigidly attached to said scoop and extending rearwardly therefrom between said ribs on said vertical supports, pivot pins extending through openings in said ribs of said supports and through cooperating openings formed in said rocker arms at points spaced from the rear ends thereof, means for controlling movement of the scoop about said pivot pins, said means comprising a vertically disposed fluid cylinder and piston unit carried by each of said vertical supports between the ribs formed thereon, hanger means for pivotally suspending each of said units from the associated support, and means for pivotally connecting each of said fluid units to the rear end of the associated rocker arm.

3. A scoop attachment for an industrial truck having a lift carriage mounted thereon for vertical movement, comprising a supporting frame adapted to be attached to the carriage, said frame including a plurality of vertically spaced transversely extending cross bars, a plurality of vertically disposed supports having channel-shaped portions at their rear sides which slip over the ends of said cross bars, a forwardly directed scoop carried by said frame for movement about a horizontal axis, rocker arms rigidly carried by said scoop and extending rearwardly therefrom, pivot means for pivoting said rocker arms at points spaced from the rear ends thereof to said vertical supports, means for controlling movement of the scoop about said pivot pins, said means comprising a fluid cylinder and piston unit carried by each of said vertical supports, hanger means for pivotally suspending each of said units from the associated supports, and means for operatively connecting each of said fluid units to the rear end of the associated rocker arm.

4. A scoop attachment for an industrial truck which includes a chassis carrying an upright standard having a lift carriage mounted thereon for vertical movement, comprising a vertically disposed supporting frame adapted to be attached to the carriage, said frame including a plurality of vertically spaced transversely extending cross bars, a plurality of vertically disposed supports having channel-shaped bracket portions at their rear sides which slip over the ends of said cross bars, means for securing said vertically disposed supports in selected positions laterally of said cross bars, each of said vertical supports being provided with forwardly projecting vertically disposed laterally spaced ribs having forwardly projecting pivot lugs on their lower ends, a forwardly directed scoop carried by said frame for movement about a horizontal axis, rocker arms rigidly attached to said scoop and extending rearwardly

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therefrom, said rocker arms extending between said ribs on said vertical supports, pivot pins extending through pivot openings in said lugs and through cooperating openings formed in said rocker arms intermediate their ends, and means for controlling movement of the scoop about said pivot pins, said means comprising an actuating unit carried by said frame and operatively connected to said rocker arms.

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