May 2, 1950 R. C. SHOEMAKER 2,506,242

VEHICLE MOUNTED CRANE WITH LOAD LIFTING ACCESSORY

Filed July 6, 1945 4 Sheets-Sheet 1

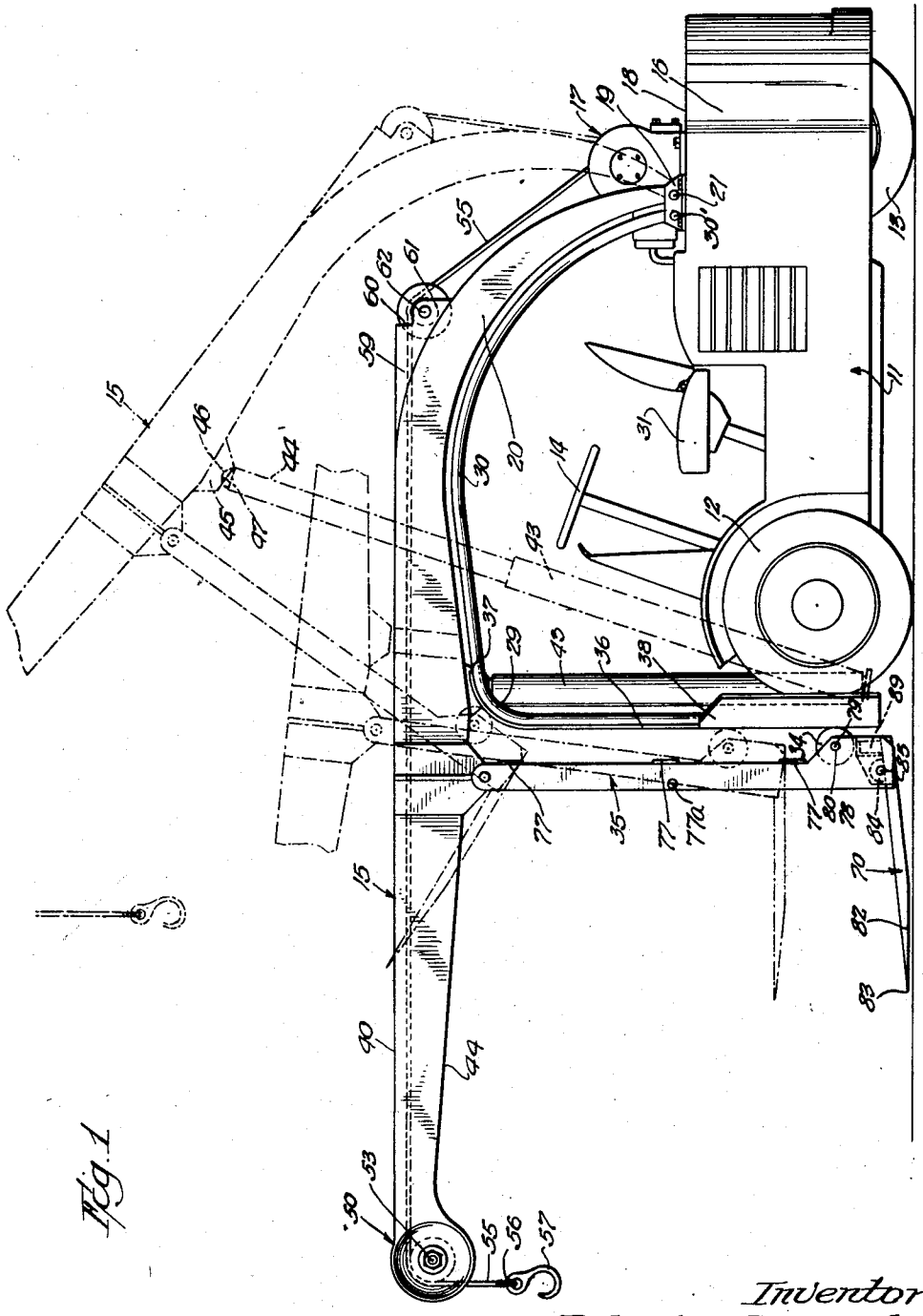


Fig. 1

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Filed July 6, 1945 4 Sheets-Sheet 2

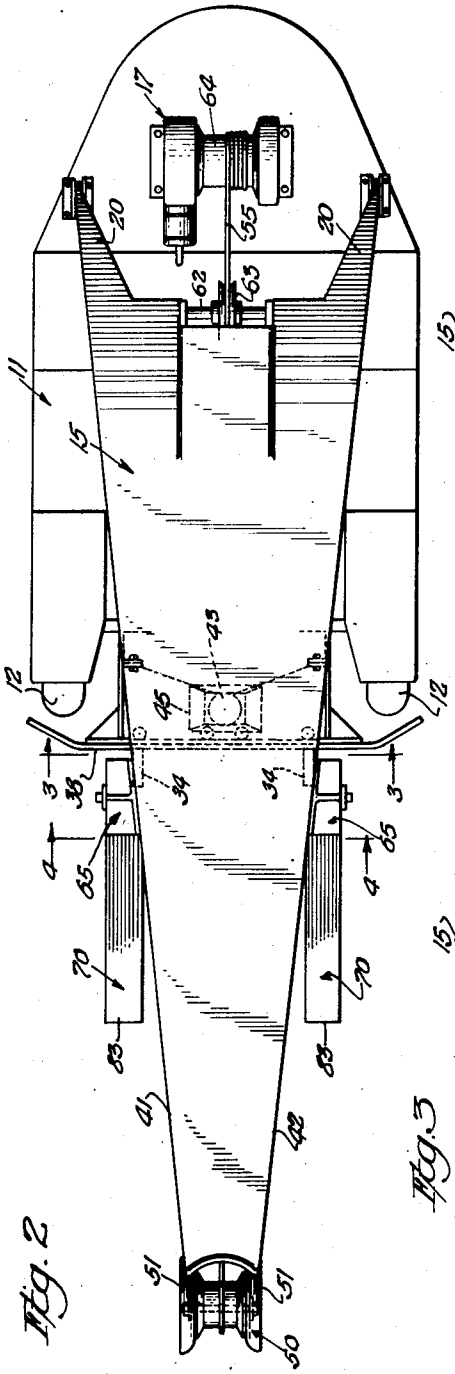


Fig. 2

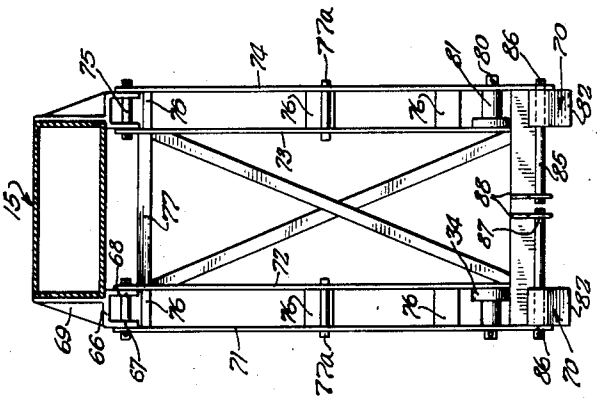


Fig. 4

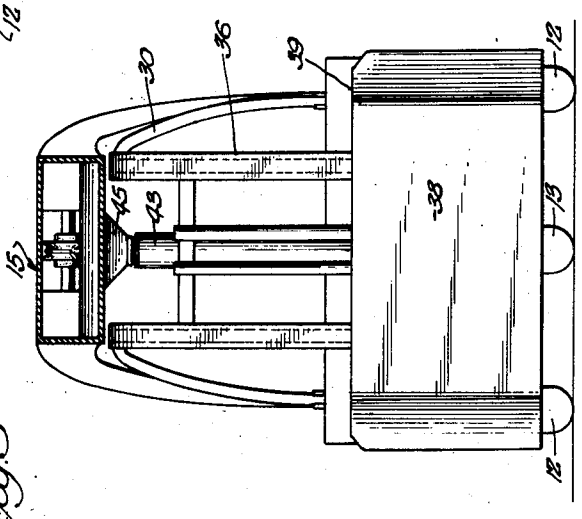


Fig. 3

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VEHICLE MOUNTED CRANE WITH LOAD LIFTING ACCESSORY

Filed July 6, 1945 4 Sheets-Sheet 3

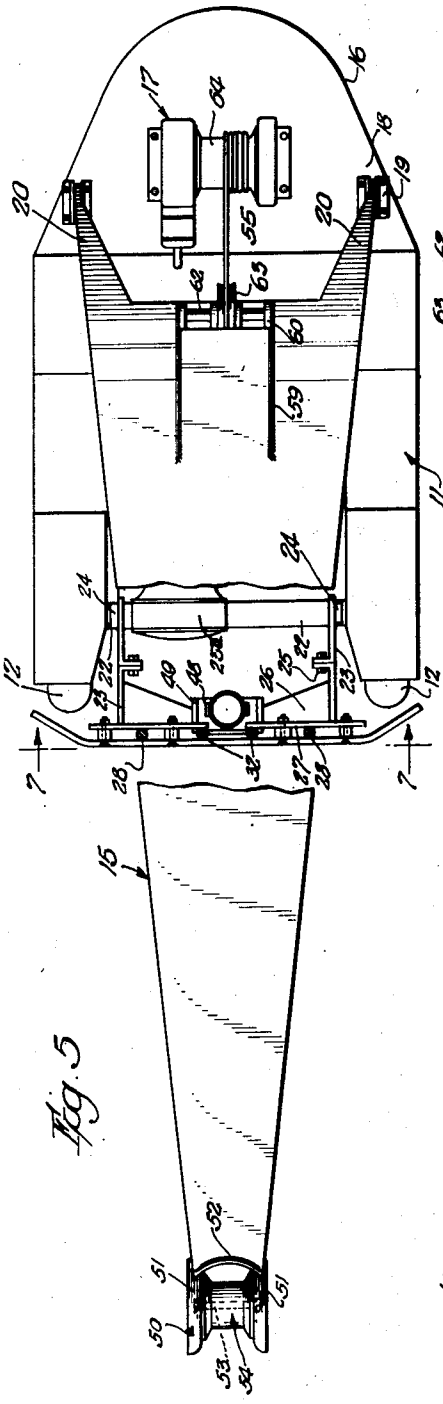


Fig. 5

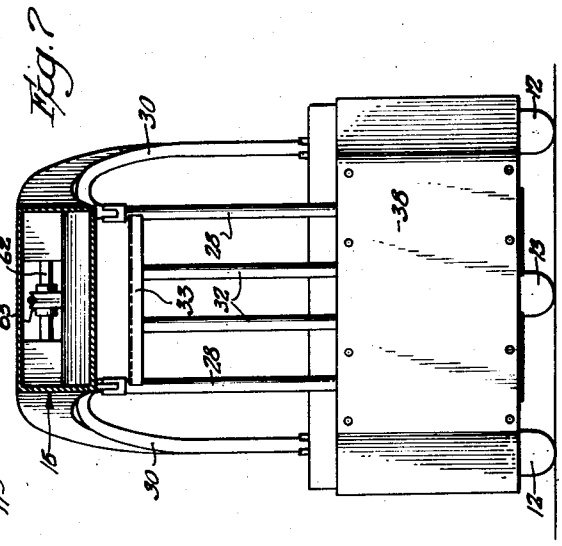


Fig. 7

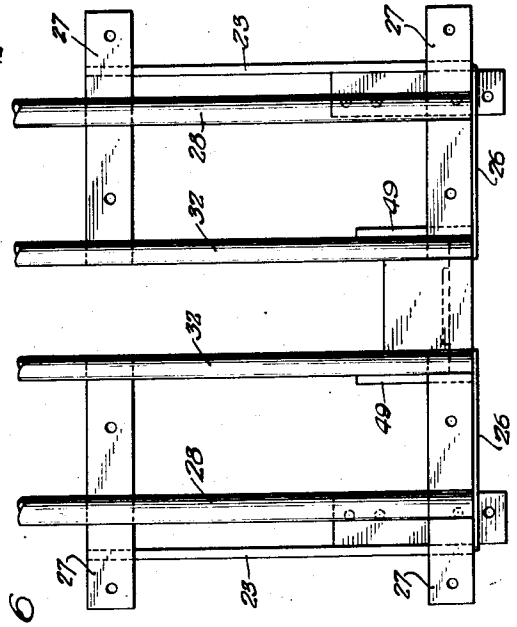


Fig. 6

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VEHICLE MOUNTED CRANE WITH LOAD LIFTING ACCESSORY

Filed July 6, 1945 4 Sheets-Sheet 4

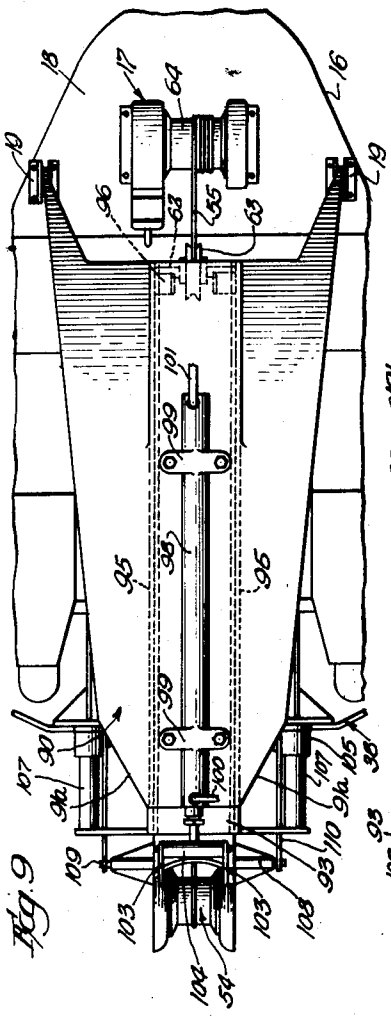


Fig. 9

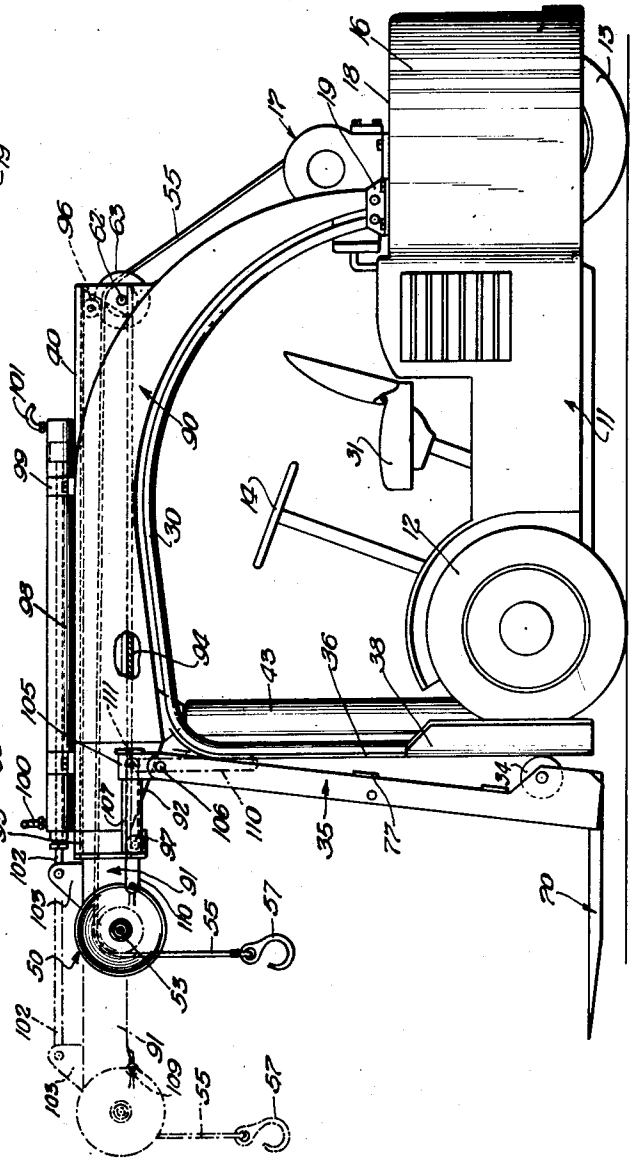


Fig. 8

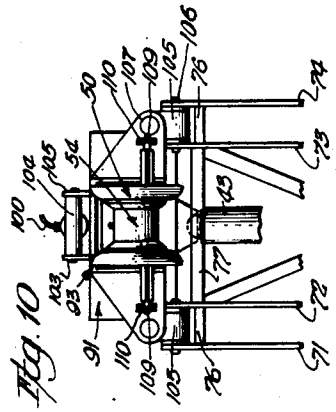


Fig. 10

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Patented May 2, 1950 2,506,242

UNITED STATES PATENT OFFICE

2,506,242

VEHICLE MOUNTED CRANE WITH LOAD LIFTING ACCESSORY

Robert C. Shoemaker, Portland, Oreg., assignor to Hyster Company, Portland, Oreg., a corporation of Oregon

Application July 6, 1945, Serial No. 603,433

10 Claims. (Cl. 214—65)

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The present invention relates to vehicle mounted cranes, and particularly to improved forms of vehicle mounted cranes provided with load lifting accessories of the type having a pair of horizontally extending load arms to be placed under the load.

One of the objects of the invention is the provision of an improved vehicle mounted crane, the structure of which is such that its load lifting adaptability is greatly increased, since it may lift a load either by means of a cable attached to the boom or a pair of load lifting arms that are located at such a low point that they may be moved under the load.

Another object of the invention is the provision of an improved vehicle mounted crane which is adapted to lift articles of irregular size and shape by means of suitable tackle, cables, etc., and also adapted to lift loads which have a stable lower supporting surface by merely running a pair of load lifting arms under the load and raising it with the same boom that supports the cable lift loads.

Another object of the invention is the provision of an improved vehicle mounted crane of the class described having load lifting arms, which is provided with an extensible boom that may also be used for tilting the load lifting arms into a better load carrying position or a downwardly extending position which is best adapted for the insertion of the arms under the load.

Another object of the invention is the provision of an improved vehicle mounted crane provided with load lifting arms which may be used to stack articles of merchandise and which may also be used for lifting articles of irregular shape and for conveying them into freight cars and other inaccessible points where the vehicle cannot itself be driven.

Another object of the invention is the provision of an improved lift truck which is also provided with a forwardly extending boom and a pulley supported cable at the end of the boom so that the truck may be used not only for lifting loads on its load arms, but additional articles may be lifted and/or conveyed at the same time by being carried by the end of the boom.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the four sheets of drawings accompanying the specification,

Fig. 1 is a side elevational view of a vehicle

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mounted crane provided with load arms and constructed according to the invention;

Fig. 2 is a top plan view of the device of Fig. 1;

Fig. 3 is a front elevational view in partial section, taken on the plane of the line 3—3 of Fig. 2, looking in the direction of the arrows;

Fig. 4 is another sectional view, taken on the plane of the line 4—4 of Fig. 2, looking in the direction of the arrows;

Fig. 5 is a top plan view similar to Fig. 2, partially broken away to show the mode of support of the front load lifting structure on the front axle housings of the vehicle;

Fig. 6 is a fragmentary elevational view of the front guard structure, with the apron removed;

Fig. 7 is a sectional view, taken on the plane of the line 7—7 of Fig. 5, looking in the direction of the arrows;

Fig. 8 is a side elevational view of a modification in which the load carrying arms are adapted to be tilted by means of the movement of an extensible boom;

Fig. 9 is a top plan view of this modification having this extensible boom; and

Fig. 10 is a fragmentary front elevational view.

In Figs. 1 and 2 I have illustrated, in its entirety, a vehicle mounted crane which is preferably carried by an automotive vehicle 11 of the type disclosed in the prior application, Ser. No. 516,405, of George V. Johnson on Lift trucks which has now issued as United States Letters Patent No. 2,387,077.

This automotive vehicle is provided with a pair of front drive wheels 12 and a rear steerable wheel 13 adapted to be turned for steering the vehicle by a steering wheel 14. By preference, the rear end of the vehicle is heavy, so as to serve as a stabilizing weight.

This steered wheel 13 is adapted to move to a position at substantially right angles to that shown, thus permitting the vehicle to turn in a very small radius, and the stabilizing weight serves as a counterweight to balance the load which is carried at the end of a boom 15.

The vehicle is provided with a housing 16, which houses its internal combustion motor, the steerable wheel, the source of hydraulic fluid under pressure, and other associated mechanism necessary for the operation of the vehicle, the boom, and a winch 17.

The winch 17 is preferably mounted on the top wall 18 of the housing 16, which is also used to mount a pair of angle brackets 19, upon which the rear legs 20 of the boom 15 are pivotally mounted at 21.

Referring to Fig. 5, the two drive wheels 12 are carried by suitable axles mounted in the axle housings 22 on either side of the differential housing 23a, and this axle housing may be used to support the forward guard structure and the mechanism by means of which the boom 15 is tilted. For example, brackets 23 may have partially cylindrical flanges 24, which are welded to the top of the axle housings 22, and these brackets may be secured by means of bolts 25 to the attaching flanges of the additional supporting brackets 26.

The supporting brackets 26 are welded to transverse bars 27, which also support a plurality of vertically extending rods or tubes 28 adapted to serve as guards for the protection of the operator. These guard members 28 preferably extend as shown in Fig. 1 from a point forwardly of the front axle housings vertically upward to the point 29, where they are bent backwardly at a slightly obtuse angle to extend backwardly and slightly upwardly.

At 30 the rods or tubes which form the guard structure are bent on substantially the curve of a portion of a circle to extend downwardly over and in back of the operator, who occupies the seat 31. Two of the tubes 28, one at each extreme side, may thus be secured at their rear ends by means of a suitable bolt 30' to the same brackets 19 in fixed position. The other two tubes 32 preferably terminate at a bar 33, to which they are welded adjacent the front top of the vehicle.

The bar 33 has its ends welded to the guard tubes 28. In order to provide a better track for the rollers or wheels 34 (Fig. 1) which are carried by the load supporting member 35, the guard tubes 28 may have their vertical portion provided with upwardly extending metal band 36, which curves over past the point 29 to the point 37 beyond which the rollers need not pass.

These metal bands 36 are flush with and may form a continuation of an apron 38 comprising a substantially rectangular piece of sheet steel, which extends upwardly to a point above the fender and laterally beyond each wheel. The apron 38 is preferably bent backwardly and diagonally at 39 on each side in such manner as to fend off any objects which might otherwise engage the wheel.

The boom 15 may be constructed substantially as shown in the co-pending application of George V. Johnson, Ser. No. 603,552, filed July 6, 1945, entitled Vehicle mounted cranes. The same is true of its mode of mounting on the vehicle and the operating mechanism for the boom.

The boom preferably consists of an elongated sheet metal member, which may taper laterally from the back to the front, and which is of substantially box-like construction in cross section; that is, the boom has a top plate 40, a pair of side plates 41, 42, and a bottom plate 44, all of the shape shown, and welded together to form this elongated boom with the separated depending box-like rear legs 20 downwardly curved, behind the operator.

As to its vertical thickness, the boom is preferably deepest adjacent the point of lift by means of a hydraulic ram 43 which acts upon a block 45. From this point forwardly and backwardly the boom may taper as to its vertical dimension.

The upper end of the hydraulic ram 43 is preferably provided with a partially spherical formation 46 engaging in a complementary socket 47, as depicted in dot and dash lines in Fig. 1, where

it is held by virtue of the weight of the boom. At its lower end the ram cylinder is also mounted for swinging movement and supported by a plate 48, which is carried by the plates 26, 49, and 27 that are welded together. Thus, the cylinder and piston are supported directly by the front axle housings, and they are adapted to act on the boom 15 to raise or lower it, the lowering being accomplished by virtue of the gravity load of the piston and boom.

The hydraulic ram 43 may be provided with suitable conduits leading from a source of hydraulic fluid under pressure, such as a pump driven by the vehicle engine and controlled by suitable valves so that pressure may be applied to ram 43 or the fluid under pressure may be permitted to run back to a suitable reservoir.

The boom 15 is preferably provided at its outer end with a suitable malleable cast metal pulley mounting 50, comprising a pair of circular discs 51 joined by a frame 52 and having a transverse shaft 53 for supporting a drum-like pulley 54. A cable 55 is provided with a hook 57 suitably secured to the cable by means of a loop 56, and the cable passes over the pulley 54 into the interior of the boom 15.

The pulley 54 is wide enough so that it will not only accommodate the cable, but the hook 57 and such portions of a cable sling as may at times be drawn up over the pulley into the boom.

At its upper rear end the boom 15 is provided with a housing extension 59 of substantially rectangular shape, which communicates with the interior of the boom 15 through a cut-out portion, which is open at its rear end 60. Here the boom supports, by means of a pair of bearing flanges 61, a shaft 62, which has a pulley sheave 63 that rotates and slides on the shaft 62.

The cable 55 passes out of the boom at the opening 60 over the pulley sheave 63 and down about the drum 64 of the winch 17. The winch 17 is preferably of the hydraulic motor type, with a worm and worm gear drive between the hydraulic motor and the drum so that it is automatically held in place by the irreversible worm and can be controlled merely by means of a valve which controls the hydraulic fluid from the same source that is connected with the cylinder 43.

The sheave 63 slides as the cable 55 winds on the winch drum 64 so as to permit the cable to wrap helically on the drum.

The boom 15 is provided forwardly of the guard tubes 28, 32 with a pair of metal angle brackets 65, which are preferably of cast metal and which have a horizontal flange 66 and a pair of depending flanges 67, 68 reinforced by a triangular flange 69. These brackets may be welded to the side plates 41, 42 of the boom, and they serve to support the load-carrying member or accessory 35, which is provided with the load arms 70.

The load-carrying member may have its vertical frame built up of a plurality of metal bars 71, 72, 73, 74. The bars 71, 72, and 73, 74 are spaced sufficiently to receive the depending flanges 67, 68 carried by the boom to which they are secured by means of a stub shaft 75 and retained in place by through cotter pins for pivotal movement. A plurality of transverse frame members 76 secure the bars 71, 72 and 73, 74 together in fixed relation. These two assemblies are then secured together by additional transverse frame members 77 (Fig. 1).

In order to provide clearance for the backward tilting of the upper end of this load-supporting member 35 as the boom rises to the dotted line

position of Fig. 1, the rollers or wheels 34 are preferably located backwardly of the main portions of the frame member 35, and thus the bars 71, 72, 73, 74 are preferably provided with a wider portion 78 at the bottom, having apertures 79 for the stub shafts 80 which carry the wheels 34.

Suitable tubular spacers 81 on shafts 80 hold the rollers or wheels in their proper lateral position so as to engage the tracks 36. The load-carrying arms 70 may comprise elongated metal bars which are tapered adjacent their outer ends on the lower side, as indicated at 82 so as to have a pointed knife-like end 83 that can be shoved under a load and which can wedge its way into load-lifting position.

At their rear ends each load arm 70 has a bearing portion 84, by means of which it is mounted on a shaft 85. Each shaft 85 is mounted for rotation in a bore 86 in the side frame member 74 and 71 and also mounted in an aperture 87 in a separate bracket 88.

The rear end of the load-lifting arm 70 engages a fixed stop bar 89 when it is in its load-lifting position of Fig. 1. However, either load arm may be pivoted in a clockwise direction out of engagement with the stop bar 89 until it reaches past vertical position, engaging the frame members 77, where the load arm is held by sliding pin 77a. Thus, either load-lifting arm may be folded, and either one may be used separately, or both may be folded up.

The operation of the load-carrying accessory 35 is as follows: When the boom 15 is lifted by means of the hydraulic ram 43, the point of pivot at shafts 75 of the load-carrying accessory 35 moves upwardly and backwardly to the dotted line position shown.

In the lower dotted line position it will be apparent that the vertical frame members 71—74 come closer to the track 36, but due to the rearward location of the rollers 34 sufficient clearance is provided. Thus, the load-carrying accessory 35 has its vertical frame members tilted as it rises, and in its loweremost position the load arms 70 may be in the proper downwardly tilting position to get under a load.

At an intermediate position (the lower dotted line position) these load arms 70 come to horizontal position and then begin to tilt upward so as to retain the load; and this action is brought about by the movement of the boom 15. As the load is lifted the rollers 34 roll on the track 36, and the retentive action of the load arms 70 is augmented constantly until the extreme upper dotted line positiion shown in Fig. 1.

Thus the operator may drive the vehicle from place to place without danger of the load falling off the arms 70. Loads may be stacked on other loads, and the end of the boom 15 may be depressed and used as a bumper to push the load around on the stack.

By means of the specific arrangement of the mechanism the load carrying arms are automatically brought into load engaging position and later into load retaining position. By means of this load carrying accessory the vehicle is adapted not only to lift loads by means of a sling on cable 55 and boom 15, but any load having a stable lower surface can be engaged by the load arms 70 and lifted more quickly to a predetermined height. After that it may be lifted still higher by means of the boom and hook 57.

Referring now to Figs. 8 to 10, these are views showing a modification. In this modification the boom is extensible, and it consists of a main section 90 and a sliding boom section 91. The main boom section 90 may correspond in shape to that previously described as far as this section goes, but it is more sharply tapered at each side plate 91a and the bottom plate 92 to the front collar 93, which is of substantially rectangular shape in cross section.

The collar 93 slidably engages the sliding section 91, which is also of substantially box shape, but is uniform in cross-section from end to end and adapted to be engaged by suitable guides 94 and 95, respectively, below and on each side of the sliding section 91.

The sliding section 91 may be provided with a roller 96 for engaging the top plate 40 of the main section to reduce friction in the sliding movement of the section 91. Another similar roller 97 may be carried inside the depending flanges of the collar 93 to engage under the sliding boom section 91 at its outer end.

In some embodiments of the invention the sliding boom section 91 may be extended manually by means of suitable tools, or the end of the boom may be chained to a fixed member, such as a column, and the boom may be extended by moving the vehicle backward. It may be telescoped inwardly by moving the vehicle forward, while the end of the extensible section 91 engages a fixed member, such as a column or wall.

The extensible section 91 is, however, preferably provided with a cylinder and piston 98, the cylinder being fixedly mounted on the fixed section 90 of the boom by brackets 99.

The piston in the cylinder 98 is preferably a two-way piston, which may be driven in either direction by hydraulic fluid applied through the conduits 100 and 101 to move the piston rod 102. The piston rod 102 is mounted on a bracket 103 carried by the top of the movable section 91.

The bracket 103 has a pair of bearing flanges provided with apertures for receiving the reduced ends of the cross head 104. Thus in this embodiment the movable boom section 91 may be extended hydraulically and may be retracted hydraulically.

The load carrying accessory 35 with its load arm 70 may be similar in structure, and the other parts of the vehicle may also be similar to that previously described. In this case, however, the vertical frame members or hangers 35 are pivotally supported upon bearing members 105 by means of the pivot pins or bolts or rivets 106, and the bearing members are slidably mounted upon the rods 107 carried by the collar 93. The bearing members may have cylindrical bores for receiving the rods 107.

The movable boom section 91 is then provided with the laterally projecting rods 108 at each side, having a reduced cylindrical portion 109 to be received in apertures in the links 110. The links 110 comprise straps of metal, the opposite end of which is pivotally mounted at 111 on the bearing members 105.

Thus, the position of the uppermost pivot 106 of the load carrying member 35 can be varied by actuating the cylinder and piston 98. When that piston is moved outward, the extensible boom 91 is extended, drawing with it the links 110 and moving the bearing members 105 forward. This causes the load arms 70 to be depressed from the position of Fig. 8 to that of Fig. 1 for reception under a load.

When the load arms have been properly placed under the load by moving the vehicle forward, then the piston of the cylinder and piston 98

may be retracted, drawing the upper pivot of the load carrying member backward until the load carrying arms 70 are tilted upwardly at their forward ends to prevent the load from sliding off the arm 70.

When it is desired to extend the boom still farther to use a long boom, the links 110 may be removed from their connection 109 to the extensible boom section 91 and may be permitted to hang down, as shown, in dotted line position 110, in Fig. 8. Then the boom may be extended and retracted without moving the bearing members 105.

The operation of this embodiment of the invention will be apparent from the foregoing description. In this case the boom is not only lifted hydraulically, but it is adapted to be extended and retracted hydraulically; also the load carrying accessory is adapted to have its load arms tilted downward hydraulically or lifted upwardly to load retaining position by hydraulic means.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a load carrying vehicle, the combination of a vehicle having drive wheels and a steering wheel mounted on a chassis, with an elongated boom pivotally mounted on said chassis adjacent its rear end and extending upwardly and forwardly, a hydraulic piston mounted in a cylinder carried by said chassis at the front of the vehicle and providing a movable support for the forward end of the boom, a track carried by and extending upwardly at the front end of the chassis, a load carrying member carried by said boom and pivotally mounted thereon, said load carrying member having a depending frame provided with a forwardly projecting load carrying arm, roller means rotatably carried by said depending frame near the lower end thereof and aligned for normal engagement with said track, said load carrying arm extending forwardly and downwardly in the lowermost position of said boom for placement under a load by forward movement of the vehicle, and said load carrying arm being movable to upwardly tilted position at its forward end by the upward movement of said boom, which retracts the upper end of said load carrying frame rearwardly of said vehicle and track to swing the upper end of said depending frame about a moving fulcrum provided by said track and roller means.

2. In a load carrying vehicle, the combination of a vehicle having drive wheels and a steering wheel mounted on a chassis, with an elongated boom pivotally mounted on said chassis adjacent its rear end and extending upwardly and forwardly, a hydraulic piston mounted in a cylinder carried by said chassis at the front of the vehicle and providing an extensible support for the forward end of the boom, a track carried by and extending upwardly at the front end of the chassis, a load carrying member carried by said boom and pivotally mounted thereon, said load carrying member having a depending frame provided with a forwardly projection load carrying arm, roller means carried by said depending frame near the lower end thereof and normally engaging said track, said load carrying arm extending forwardly and downwardly in the lowermost position of said boom for placement under a load by forward movement of the vehicle, and said load carrying arm being movable to upwardly tilted position at its forward end by the upward movement of said boom, which retracts the upper end of said load carrying frame rearwardly with respect to said vehicle and track, said arm being mounted for pivotal movement on said frame and having an alternative folded position within said frame.

3. In a load carrying vehicle, the combination of a vehicle having drive wheels and a steering wheel mounted on a chassis, with an elongated boom pivotally mounted on said chassis adjacent its rear end and extending upwardly and forwardly, a hydraulic piston mounted in a cylinder carried by said chassis at the front end of the vehicle and providing an extensible support for the forward end of the boom, a load carrying member carried by said boom and pivotally mounted thereon, said load carrying member having a depending frame provided with a forwardly projecting load carrying arm, said load carrying arm extending forwardly and downwardly in the lowermost position of said boom for placement under a load by forward movement of the vehicle, and said load carrying arm being movable upwardly by the upward movement of said boom, which retracts the upper end of said load carrying frame rearwardly with respect to said vehicle, said chassis also supporting a pair of guard members which extend upwardly at the front of the vehicle to a position below the boom and then rearwardly and downwardly at the rear of the vehicle for protecting the operator, and each of said guard members carrying a vertically extending track at the front of the vehicle for engagement by said load carrying frame as it is lifted by the boom.

4. In a load carrying vehicle, the combination of a vehicle having drive wheels and a steering wheel mounted on a chassis, with an elongated boom pivotally mounted on said chassis adjacent its rear end and extending upwardly and forwardly, a hydraulic piston mounted in a cylinder carried by said chassis at the front of the vehicle and providing a movable support for the forward end of the boom, a track carried by and extending upwardly at the front end of the chassis, a load carrying member carried by said boom and pivotally mounted thereon, said load carrying member having a depending frame provided with a forwardly projecting load carrying arm, roller means rotatably carried by said depending frame near the lower end thereof and aligned for normal engagement with said track, said load carrying arm extending forwardly and downwardly in the lowermost position of said boom for placement under a load by forward movement of the vehicle, and said load carrying arm being movable to upwardly tilted position at its forward end by the upward movement of said boom, which retracts the upper end of said load carrying frame rearwardly with respect to said vehicle and track, said chassis also supporting a pair of guard members which extend upwardly at the front of the vehicle to a position below the boom and then rearwardly and downwardly at the rear of the vehicle for protecting the operator, and said boom comprising a main section and an extending section mounted for longitudinal sliding movement relative to said main section.

5. In a load carrying vehicle, the combination of a vehicle having drive wheels and a steering wheel mounted on a chassis, with an elongated boom pivotally mounted on said chassis adjacent its rear end and extending upwardly and forwardly, a hydraulic piston mounted in a cylinder carried by said chassis at the front of the vehicle and providing an extensible support for the forward end of the boom, a track carried by and extending upwardly at the front end of the chassis, a load carrying member carried by said boom and pivotally mounted thereon, said load carrying member having a depending frame provided with a forwardly projecting load carrying arm, roller means carried by said depending frame near the lower end thereof and normally engaging said track, said load carrying arm extending forwardly and downwardly in the lowermost position of said boom for placement under a load by forward movement of the vehicle, and said load carrying arm being movable to upwardly tilted position at its forward end by the upward movemeht of said boom, which retracts the upper end of said load carrying frame rearwardly with respect to said vehicle and track, said boom comprising a main section and a slidably mounted section in said main section, said load carrying frame being pivotally mounted upon bearing members which are mounted for sliding movement on the main section, and connecting means between said bearing members and the extensible section whereby the bearing members may be moved backwardly and forwardly relative to said track to change the tilt of the load carrying arms from load engaging position to load retaining position, or vice versa, and hydraulic means including a piston and cylinder operating between said main section and said movable section and provided with a controllable source of hydraulic fluid under pressure for moving said movable section relative to said main section and for also effecting a tilt of the load carrying arms.

6. In a combined crane and load arm lifting device, the combination of a support with a boom mounted at one end of said support for pivotal movement and extending over said support, an upwardly extending track carried by the end of said support opposite to the point of mounting of said boom, hydraulic means adjacent to said track reacting against said support and acting on said boom to lift the boom, and a load lifting device comprising a depending carrier pivotally mounted on said boom adjacent said track for movement with the boom and having means thereon engaging the track to guide said depending carrier during movements of the boom, and substantially horizontal load carrying means on said carrier to be projected under a load to be lifted when said boom is elevated.

7. In a combined crane and load arm lifting device, the combination of a support with a boom mounted at one end of said support for pivotal movement and extending over said support, an upwardly extending track carried by the end of said support opposite to the point of mounting of said boom, hydraulic means adjacent to said track reacting against said support and acting on said boom to lift the boom, and a load lifting device comprising a depending carrier pivotally mounted on said boom adjacent said track, and substantially horizontal load carrying arms on said carrier to be projected under a load to be lifted when said boom is elevated, said arms being disposed with a downward tilt in their lowermost position for projection under the load, said carrier being provided with anti-friction means for engagement with said track as the boom is lifted.

8. In a combined crane and load arm lifting device, the combination of a support with a boom mounted at one end of said support for pivotal movement and extending over said support, an upwardly extending track carried by the end of said support opposite to the point of mounting of said boom, hydraulic means adjacent to said track reacting against said support and acting on said boom to lift the boom, and a load lifting device comprising a depending carrier pivotally mounted on said boom adjacent said track, said depending carrier having rollers thereon engaging the track to control the angular position of the carrier relative to the boom during movements of the boom, and substantially horizontal load carrying means on said carrier to be projected under a load to be lifted when said boom is elevated, said boom being made of two sections, one of which is pivotally mounted, and the other of which is telescopically mounted in the first section, and hydraulic means for extending and retracting the latter section with respect to the first section.

9. In a device of the class described, the combination of an automotive vehicle having a chassis weighted at one end, an elongated boom pivotally mounted at the weighted end of the vehicle and extending upwardly over the vehicle and forwardly over the opposite end of the vehicle, power actuated means carried at the end of the vehicle opposite said weighted end and engaging said boom at a point intermediate its pivoted end and its free end to lift said boom and any load carried thereby, means providing a track carried by the vehicle and extending upwardly near the power actuated means, a load-carrying accessory pivotally mounted on said boom and depending therefrom adjacent said power actuated means, said accessory having an outwardly extending load carrying arm adapted to be inserted under a load, said boom including a main section and an extensible section telescoping therewith, and said load carrying accessory being supported at its upper end from the main section of the boom for limited movement longitudinally of the boom and having means thereon engaging with said track to provide a fulcrum near the lower end thereof, whereby said movement of the upper end longitudinally of the boom effects tilting of the load arm to positions for passing under or retaining a load.

10. In a device of the class described, the combination of an automotive vehicle having a chassis weighted at one end, an elongated boom pivotally mounted at the weighted end of the vehicle and extending upwardly over the vehicle and forwardly over the opposite end of the vehicle, a first power actuated means carried at the end of the vehicle opposite said weighted end and engaging said boom at a point intermediate its pivoted end and its free end to lift said boom and any load carried thereby, means providing a track carried by the vehicle and extending upwardly near the power actuated means, a load-carrying accessory pivotally mounted on said boom and depending therefrom adjacent the said opposite end of said vehicle, said accessory having an outwardly extending load carrying arm adapted to be inserted under a load, said boom including a main section and an extensible section telescoping therewith, means on said main section of the boom supporting the upper end of the load carrying accessory for limited movement longitudinally of the boom, means on said load

carrying accessory engaging said track to provide a fulcrum movable along the track to positions such that said limited movement effects tilting of the load arm to positions for passing under or retaining a load, and second power actuated means for moving one extensible section relative to the other, said second power actuated means having a releasable connection to said means for supporting the upper end of the load carrying accessory for effecting said movements of the load carrying accessory longitudinally of the boom.

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