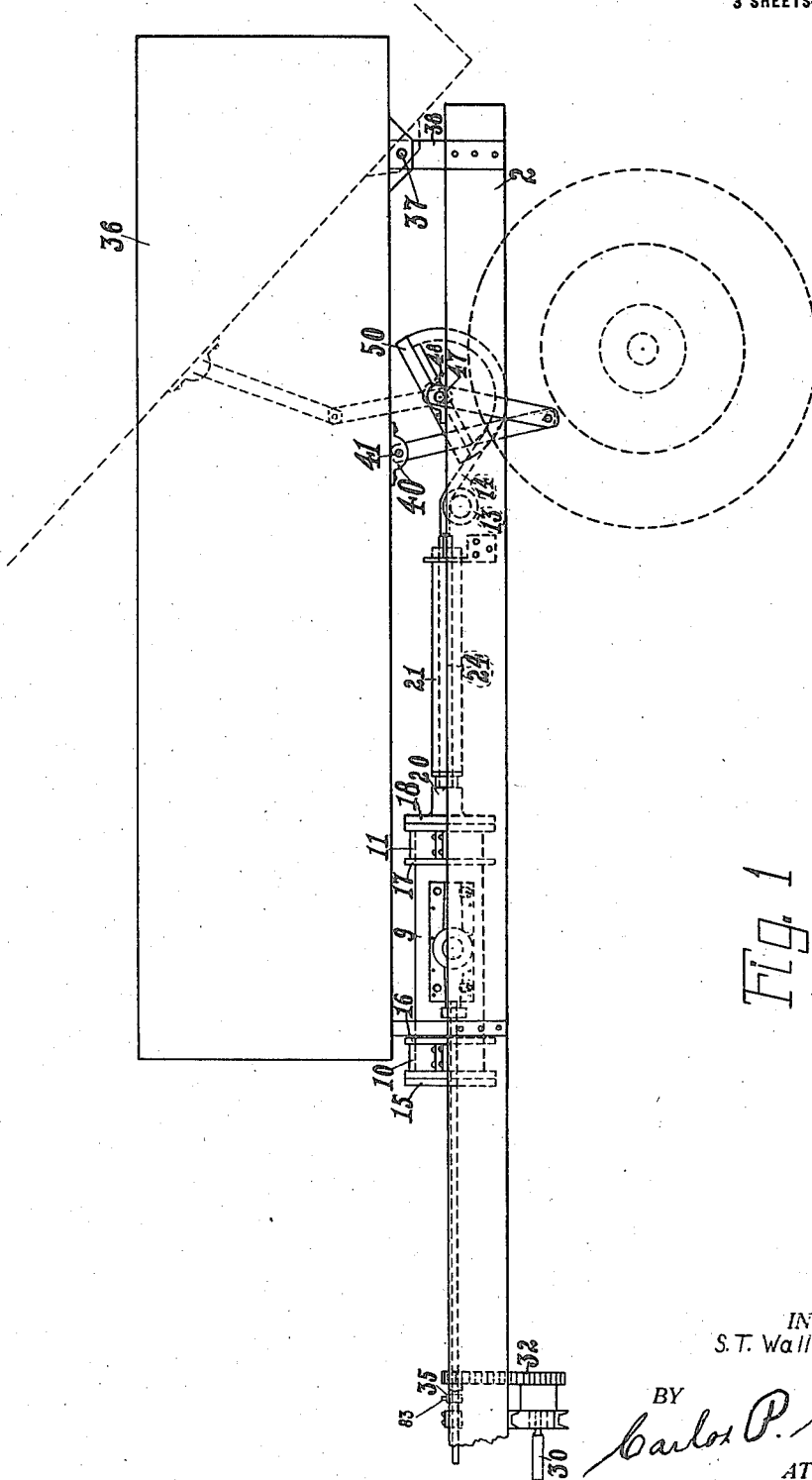


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HYDRAULIC HOIST FOR TRUCKS.
APPLICATION FILED JULY 17, 1917.

1,264,460.

Patented Apr. 30, 1918.
3 SHEETS—SHEET 1.



INVENTOR.
S.T. Wallace.

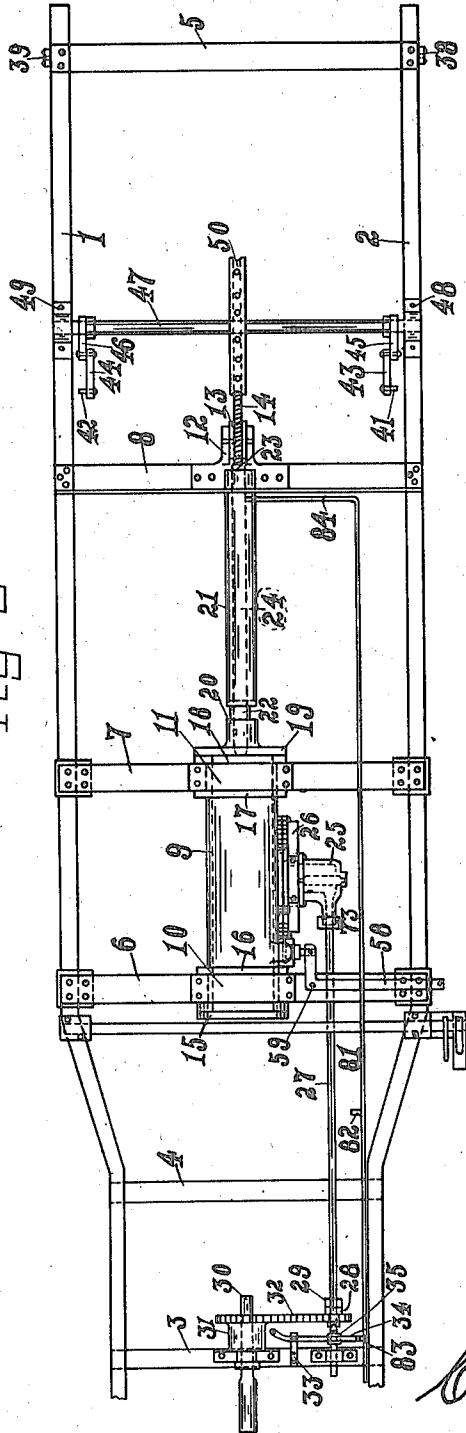
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FIG 2



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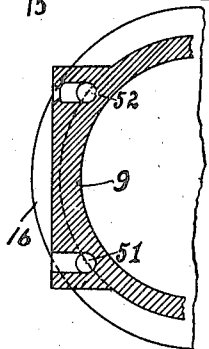
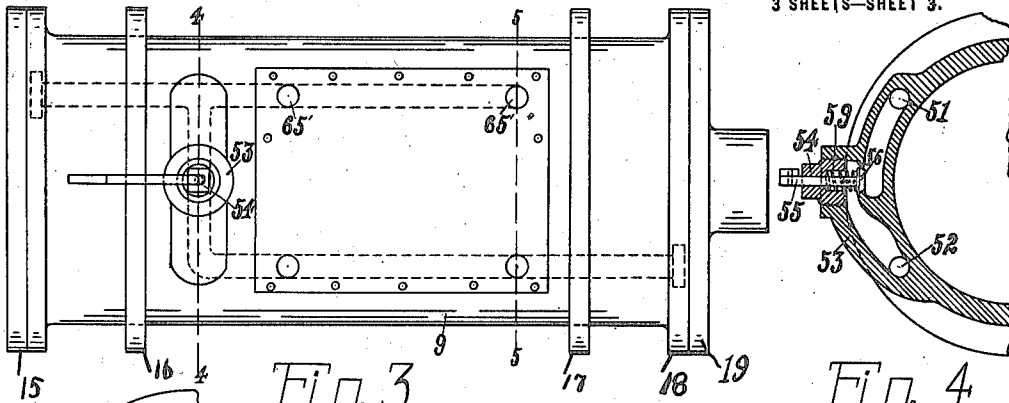


Fig. 5

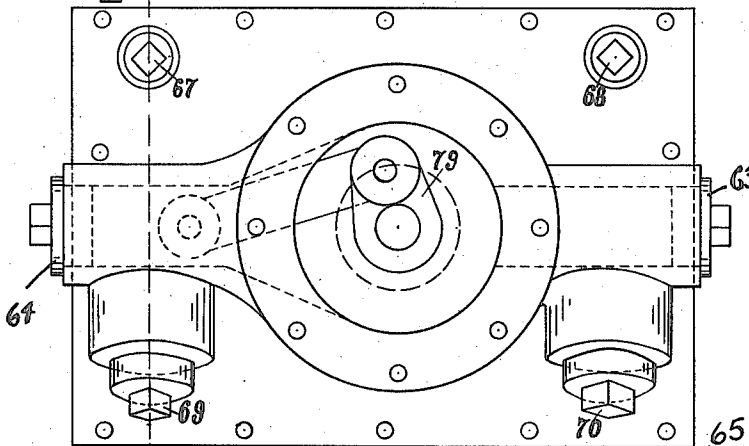


Fig. 6

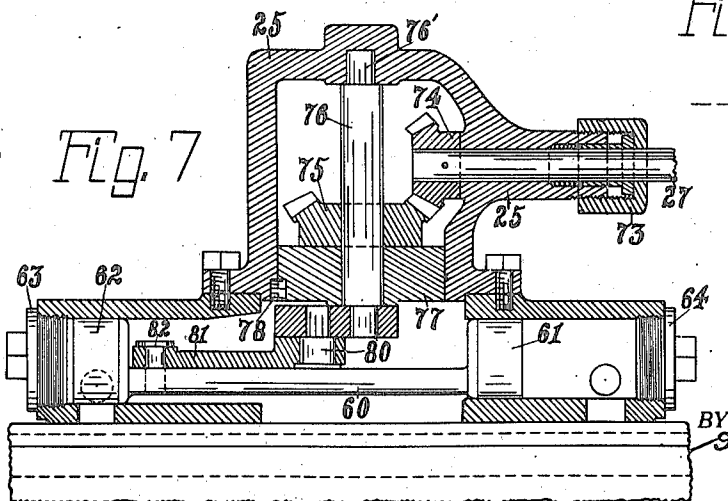


Fig. 7

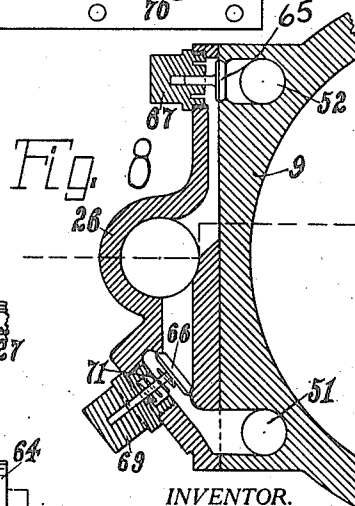


Fig. 8

INVENTOR.
S. T. Wallace.

BY
Carlos P. Griffin
ATTORNEY.

UNITED STATES PATENT OFFICE.

SAMUEL T. WALLACE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO CHARLES KELLY, OF SAN FRANCISCO, CALIFORNIA.

HYDRAULIC HOIST FOR TRUCKS.

1,264,460.

Specification of Letters Patent.

Patented Apr. 30, 1918.

Application filed July 17, 1917. Serial No. 181,045.

To all whom it may concern:

Be it known that I, SAMUEL T. WALLACE, a citizen of the United States, residing at San Francisco, in the county of San Francisco, State of California, have invented a new and useful Hydraulic Hoist for Trucks, of which the following is a specification, in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a hoist for operating the dumping bodies of automobile trucks, and its object is to produce a hoist which can be installed in almost any position as may be required by the particular construction of the automobile on which it is to be placed.

Another object of the invention is to produce a self-contained automobile and hoist operating mechanism which will require no outside piping for the operation of the hydraulic piston.

Another object of the invention is to produce a hoist which will raise the dumping body to a sufficient angle to properly dump the material carried therein, while at the same time the operating mechanism will not project unduly below the frame of the vehicle.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the drawings in which the same reference numeral is applied to the same portion throughout, but I am aware that there may be modifications thereof.

Figure 1 is a side elevation of a portion of the vehicle frame showing the dumping body thereon and illustrating the angle to which it is raised when it is to be dumped.

Fig. 2 is a plan view of the apparatus for dumping the vehicle body as it appears when assembled upon the frame of the truck, the body being removed for the purpose of illustration.

Fig. 3 is a side elevation of the hoist cylinder, the pumping apparatus being detached therefrom.

Fig. 4 is a cross sectional view of a portion of the hoist cylinder on the line 4-4 Fig. 3.

Fig. 5 is a cross section of a portion of the hoist cylinder on the line 5-5 Fig. 3.

Fig. 6 is a side elevation of the pump operating apparatus and pump chamber,

Fig. 7 is a horizontal sectional view of the pump and driving mechanism therefor, and

Fig. 8 is a vertical sectional view of the valves used for the operation of the pump.

The side members of the truck frame are indicated at 1 and 2, which side members are connected together by suitable cross pieces 3, 4 and 5, while other suitable cross pieces 6, 7 and 8 connect the side frames and serve to support its body hoisting apparatus.

The members 6 and 7 have a suitable yoke at the center to receive the hydraulic cylinder 9, and said cylinder is held in position on the cross pieces 6 and 7 by means of two straps 10 and 11 which pass thereover, and which straps are bolted to the cross pieces 6 and 7 respectively. The cross angle iron 8 is suitably riveted or bolted to the side frames 1 and 2, and it has a bracket 12 at its center which supports the wheel 13 over which the cable 14 passes. The hydraulic cylinder has flanges 15, 16, 17 and 18 to insure holding it in the proper position, and its head 19 is provided with a stuffing box 20. A large pipe 21 rests on the gland 22 of the stuffing box, and at its outer end it is supported by the cross piece 8 so that it forms a guide for the head 23 of the piston rod 24 to which the cable 14 is secured, as well as providing means whereby the piston rod will be kept clean. The pump operating mechanism is contained within two small casings 25, 26 bolted on the sides of the cylinder 9, and the operation of which will be presently explained.

The pump operating mechanism is operated by means of the shaft 27, which shaft extends into the casing 25 and which has a sprocket wheel 28 loosely mounted thereon, but which is held in a fixed position longitudinally of the shaft by means of a collar 29. Any suitable shaft extending from the power plant such as 30 with a sprocket wheel 31 thereon is made use of for driving the pump to operate the hoist, and a sprocket chain 32 extends around the two sprocket wheels 31 and 28 to drive the latter.

Mounted on the cross piece 30 is a bracket 33 which carries a lever 34, which lever operates a toothed clutch collar 35 in a well known manner, said clutch collar being moved into engagement with the sprocket wheel 28 to drive the latter whenever the lever 34 moves it rearwardly, and since

said clutch collar is keyed on the shaft 27 but movable longitudinally thereof, it will cause said shaft to be rotated when moved into engagement with the sprocket gear 28.

5 The truck body is indicated at 36 and may be of any desired form, supported on a shaft 37 carried by two brackets 38, 39 at the rear of the side frames of the vehicle.

In front of the supports 38, 39, the truck 10 body carries two bearing blocks 40 through which bearing blocks, pins 41, 42 pass, one for each block, and said pins are pivotally connected with one end of the links 43, 44. Each link 43, 44 is pivotally connected at 15 its lower end to the end of an arm as indicated at 45, 46, and said arms are carried by and rigidly connected to a shaft 47 extending entirely across the vehicle frame, and journaled in boxes 48, 49. The shaft 47 20 has a grooved segment wheel 50 mounted thereon, to which wheel the cable 14 is connected, so that as the piston rod is pulled into the cylinder 9, the wheel 50 will be rotated, the truck body will be raised to the 25 position shown in dotted lines in Fig. 1.

The cylinder 9 has two passage ways 51, 52 cast therein, one leading to one end of the cylinder and the other leading to the opposite end of the cylinder. These two 30 passage ways are joined in a boss 53, cast on the side of the cylinder, and which boss is closed by means of a plug 54 through which the stem 55 of a valve 56 passes. The valve stem 56 is connected with an L-shaped lever 58 which is pivoted at 59 on 35 the cross piece 6, the object being to enable the operator to open the valve 56 against the effort of a spring 59 inside the plug 54 whereby the pressure in both ends of the cylinder will be equalized and the weight 40 of the truck body will cause it to descend. The pump is mounted in a casing 26 previously referred to, which is bolted on the side of the cylinder 9, and it consists of the 45 double end single acting piston 60, said piston having suitable packing rings at 61, 62. The chamber forming the cylinder for the piston is closed by means of the two threaded plugs 63, 64. At the ends of the pump 50 chamber, there are openings thereinto from the passage ways 51, 52, and these passage ways are intercepted by two valves 65 which seat on the holes 65' and by two valves 66 within the casing 26. Plugs 67, 55 68 hold the two valves 65 in their proper place and two plugs 69, 70 hold the two valves 66 in their proper place, while said valves are held seated by means of a spiral spring 71 surrounding the valve stem and 60 bearing upon the plug and valve in each instance.

Mounted on the side of the casing 26 is a casing 25 which can be secured in any one of eight different positions throughout an 65 angle of 360 degrees. This casing has the

shaft 27 extending therinto through a packing gland 73, and it is provided with a small bevel gear 74 in mesh with a similar small bevel gear 75 on a shaft 76 at right 70 angles to the shaft 27. The shaft 76 has an extension 76' journaled in the casing 25, and it is also journaled in a block 77 which is secured within the casing 25 by means of a set screw 78. The shaft 76 is provided with a crank 79, the crank pin 80 of which en- 75 gages a link 81 pivotally connected by means of the pin 82 with the piston 60.

The apparatus is started by the movement of the lever 34 so that the collar 35 will en- 80 gage the sprocket gear 28, and it is stopped by means of the long rod 81 which carries a stop arm 82 which engages a pin 83 on the lever 34 and pushes the collar 35 out of con- 85 tact with the sprocket gear 28 when the piston has moved nearly to the length of its throw. The rod 81 passes over the top of the cross pieces 4, 6 and 7 and engages the piston rod with a right angle bend 84 adja- 90 cent the cross piece 8, and the tube 21 is longitudinally slotted to permit the arm 84 to move with said piston rod.

While the hoist illustrated is shown in the most convenient location, it frequently occurs that the hoist cylinder must be in- 95 stalled in some other position than the one shown, in which event the mounting is such as to give practically a universal setting to the shaft 27 thereby enabling it to be con- 100 nected with almost any driving shaft from which the power may be taken.

For example, if the cylinder 9 is installed in an inclined position, the casing 25 may be rotated to a suitable position around the axis of the shaft 76 until the shaft 27 will stand in a convenient location, or if it is 105 necessary to turn the cylinder 9, it may be turned around its own axis and the casing 25 may be then turned as may appear convenient to connect with the power shaft.

The operation of the apparatus is as fol- 110 lows:—Assuming the truck body to be in the position shown in Fig. 1 in full lines, the operator starts the apparatus by pushing the outer end of the lever 34 backwardly. This 115 will cause the clutch 35 to engage the sprocket wheel 28 and start the pump. As the pump operates, the liquid within the hoist cylinder, usually oil of some kind, is delivered from the passage way 51 to the rear end of the cylinder, and in that way the 120 piston within the cylinder 9 on the end of the piston rod 24 will be forced forward, drawing the cable 14 along with it and rotating the segment gear 50. As the segment gear rotates, the arms 45, 46 also rotate and 125 by means of the links 43, 44 they will raise the vehicle body to the position shown in dotted lines in Fig. 1.

When the body has been raised through the full stroke of the piston, the stop arm 130

82 will engage the pin 83 causing the clutch 35 to be disengaged and thereby stop the pump, thus leaving the body in the raised position.

5 When the operator desires to lower the body, he operates the lever 58 to unseat the valve 56 thereby equalizing the pressure in both ends of the cylinder, whereupon the weight of the body will bring it back to the position shown in full lines in Fig. 1, and will at the same time transfer the oil from one end of the piston to the other.

10 Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States, is as follows, express reservation being made of permissible modifications.

1. The combination with a truck frame of a dump body, depending links connected with the body for raising it, a hydraulic cylinder, a piston therein, means operated by the piston and connected with said links for raising the body, a pump on the side of the cylinder for transferring the liquid used therein from one end to the other of the cylinder, and means to operate the pump secured thereto and capable of being placed in any angular adjustment with respect to an axis at right angles to the axis of the main cylinder.

2. The combination with a truck frame of a dump body, depending links connected with the body for raising it, a hydraulic cylinder, a piston therein, means operated by the piston and connected with the links for raising the dump body, and a pump on the side of the cylinder for transferring the liquid used therein from one end to the other end thereof, the hydraulic cylinder being adjustable around its own axis and the pump operating mechanism being adjustable around an axis at right angles to the axis of the hydraulic cylinder.

3. The combination with a truck frame of a dump body, depending links for raising the body, a hydraulic cylinder, a piston therein, means operated by the piston and

connected with said links for raising the body, a pump on the side of the cylinder for transferring the fluid used therein from one end to the other end thereof, means whereby said pump may be adjusted to enable it to be operated from a number of different angles with respect to the axis of the pump cylinder, a clutch for setting said pump into operation, and means connected with the piston for disengaging said clutch when the piston has passed through its proper travel.

4. The combination with a truck frame of a dump body, depending links carried thereby for raising the body, a hydraulic cylinder, a piston therein, means operated by the piston and connected with the links for raising the body, a pump on the side of the cylinder, the latter having passage ways for the transfer of the fluid used therein from one end to the other end thereof, a pump operating mechanism capable of being adjusted in any angular position with respect to an axis at right angles to the axis of the hydraulic cylinder, an equalizing valve carried by the hydraulic cylinder for equalizing the pressure in both ends of the cylinder, and manual means for operating said equalizing valve.

5. The combination with a truck frame of a dump body thereon, depending links for raising the body, a hydraulic cylinder, a piston therein, means operated by the piston and connected with the links for raising the body, a pump on the side of the hydraulic cylinder, and means to operate said pump to transfer the liquid from one end of the cylinder to the other, the hydraulic cylinder being capable of being placed in any angular adjustment with respect to its axis, and the pump operating mechanism being capable of being placed in any angular adjustment with respect to an axis at right angles to the axis of the hydraulic cylinder.

In testimony whereof I have hereunto set my hand this 11th day of July, A. D. 1917.

SAMUEL T. WALLACE.