

Feb. 14, 1933.

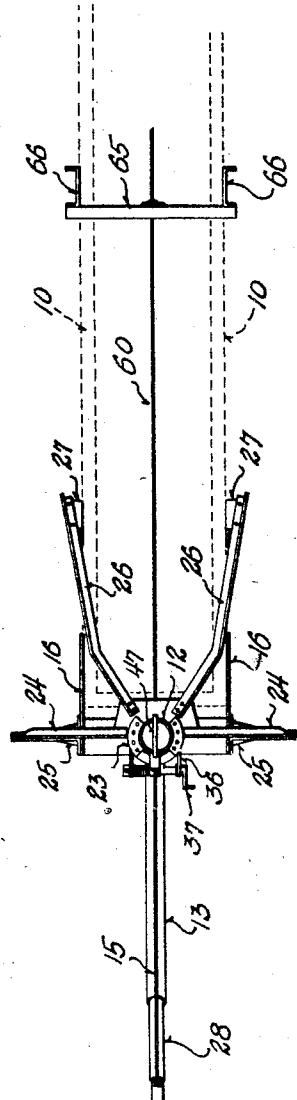
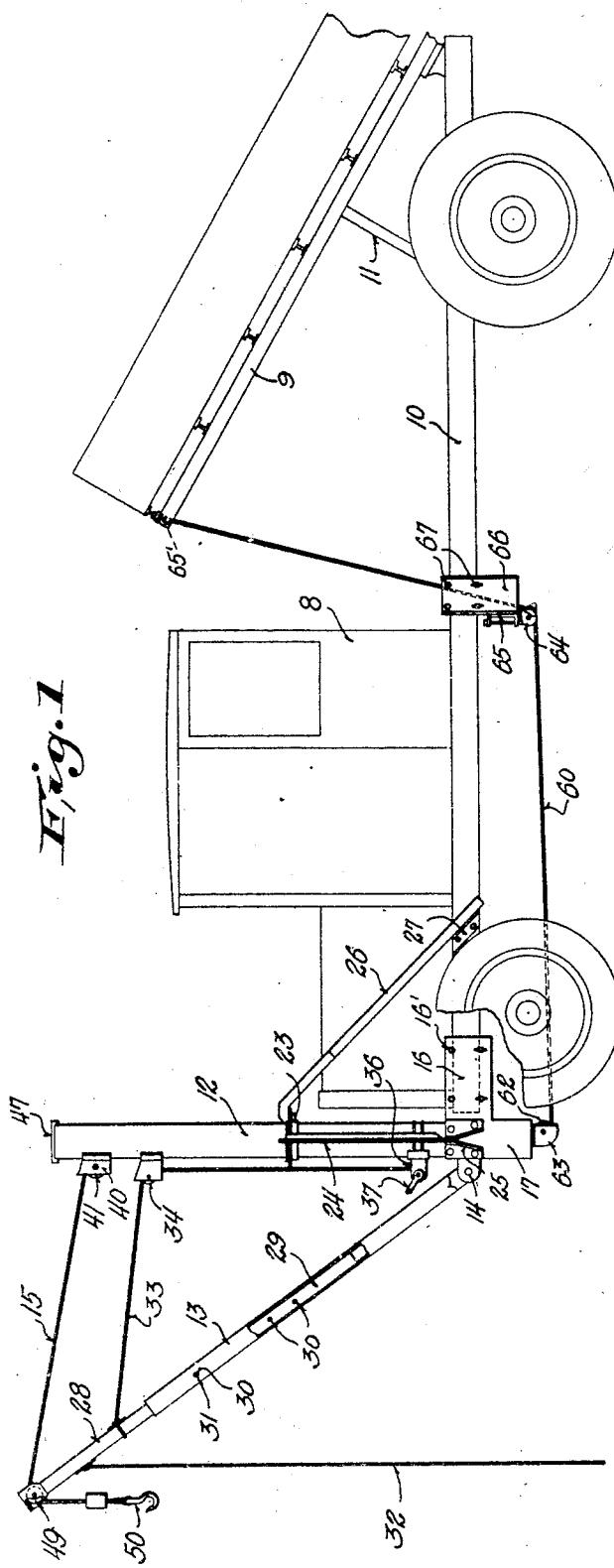
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1,897,383

POWER OPERATED HOIST

Filed June 26, 1931

3 Sheets-Sheet 1



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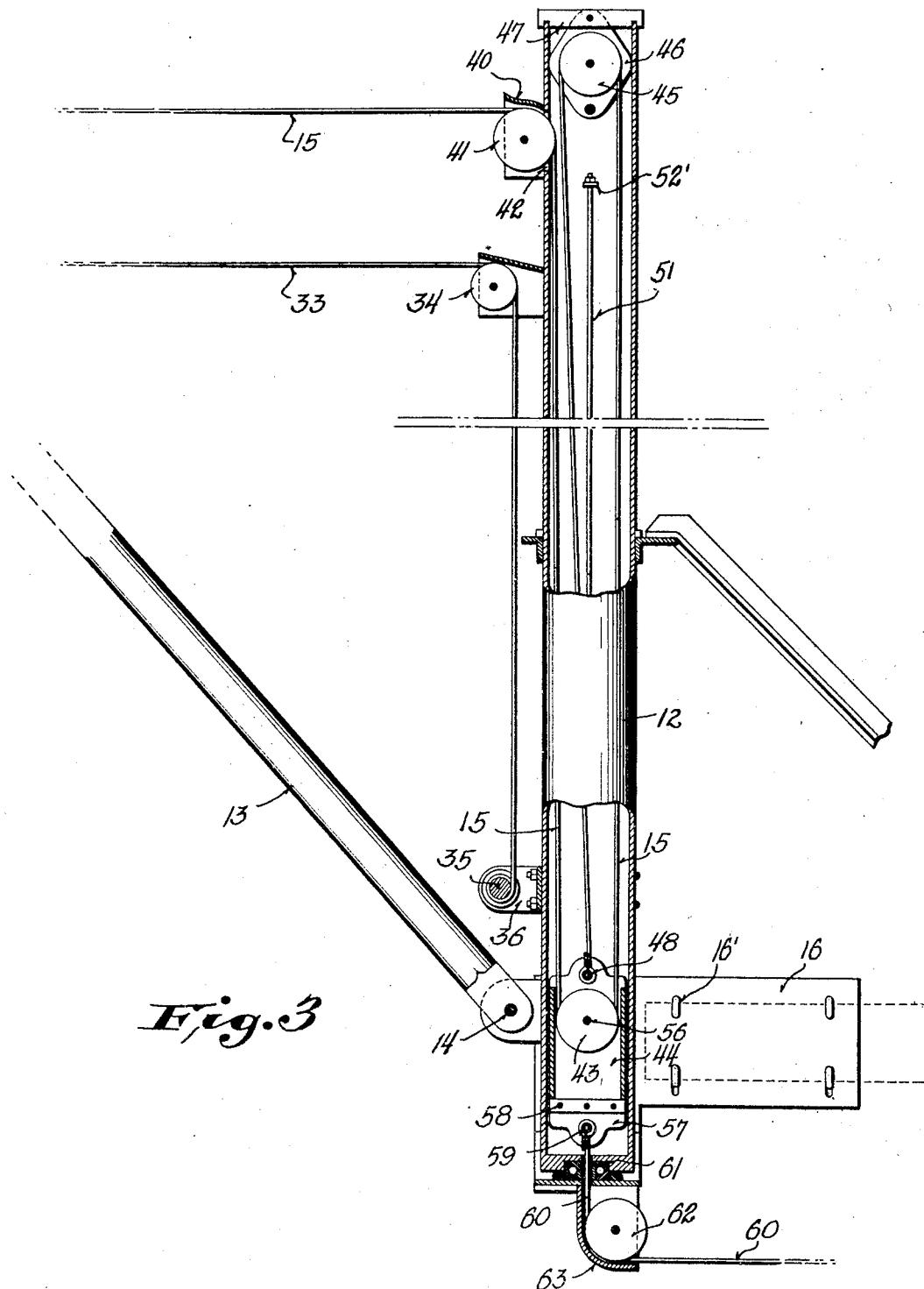


Fig. 3

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3 Sheets-Sheet 3

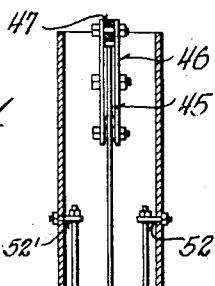


Fig. 4

Fig. 5

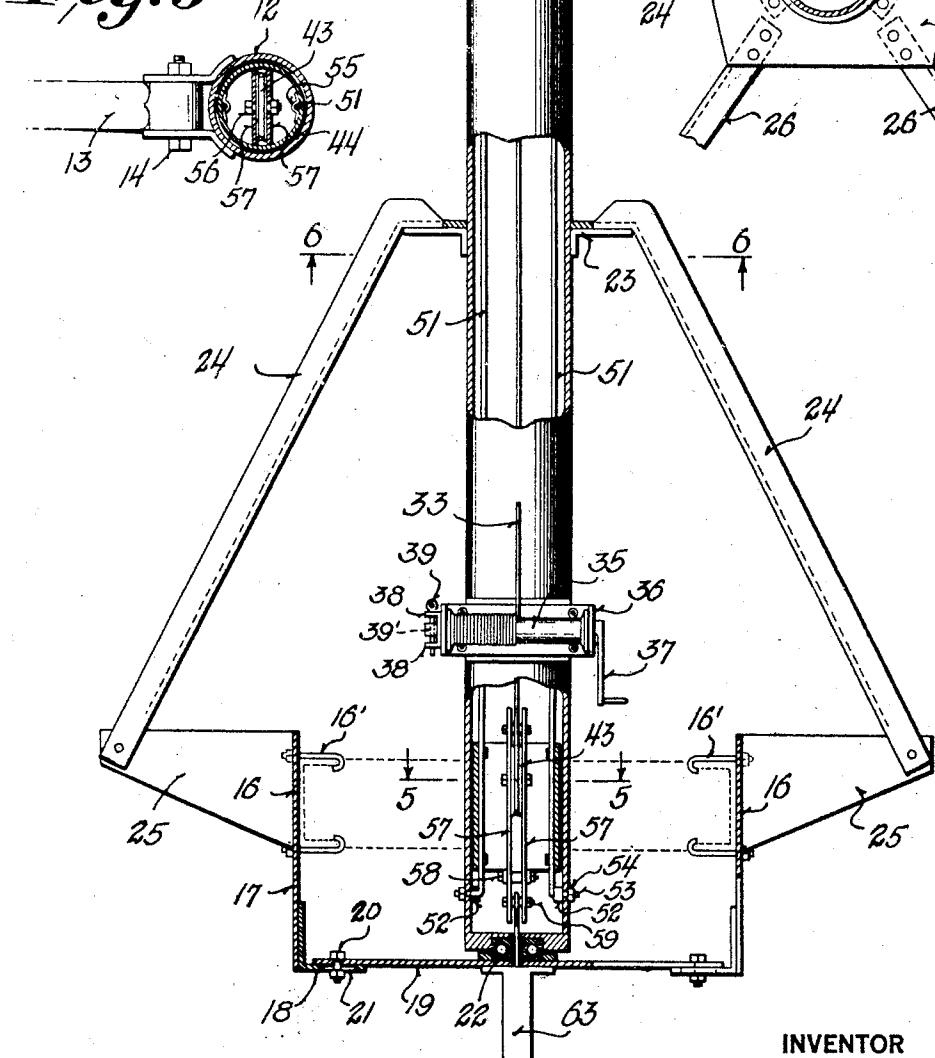
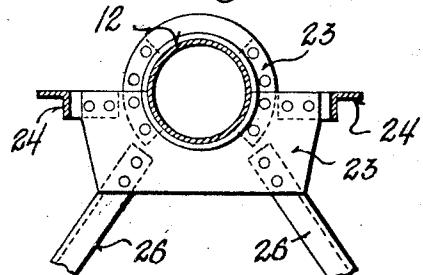


Fig. 6



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UNITED STATES PATENT OFFICE

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POWER OPERATED HOIST

Application filed June 26, 1931. Serial No. 546,982.

The invention relates to hoists and more particularly to power operated hoists.

In industrial work and in work on highways either in construction or in maintenance, there are occasions when loads have to be handled but the equipment generally available for this purpose are hoists that are provided with their own power plant and such equipment is expensive. One of the main objects of the present invention is to provide a hoist mechanism that may be readily attached to motor driven trucks that form a part of the regular equipment for work of the type mentioned above, said hoist mechanism being connected up with the power mechanism of the truck so that it may be operated therefrom without the necessity of a separate power plant. More particularly according to the present invention, the load or hoisting line of the hoist is associated with the dump body of a truck provided with such body so that the operator's control of the hoist may be effected through the controls provided for the raising and lowering of the dump body.

A further object of the invention is to provide a hoist mechanism that may be readily used on motor driven vehicles wherein the construction of the hoist is such that the load line works for a portion of its length within the mast of the hoist and danger of fouling this line is thereby eliminated. Furthermore, the arrangement hereinafter described permits a multi-part reeving of the hoist line within the mast.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings, Fig. 1 is an elevation view of an apparatus embodying the invention, parts being broken away, and parts being shown in section;

Fig. 2 is a detail plan view of the hoist mechanism and has connections with the truck body.

Fig. 3 is an enlarged side view of a portion of the boom and the mast shown partly in elevation and partly in section.

Fig. 4 is a front elevation view of the

mast with parts broken away and parts shown in section;

Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a detail sectional view taken on the line 6—6 of Fig. 4.

Referring to the drawings, the numeral 8 designates a motor driven truck of the dump body type, having the usual dump body 9 pivotally mounted on the rear of the frame or chassis 10 of the truck and adapted to be raised and lowered by any suitable dump body hoist mechanism, whether of the mechanical or hydraulically operated type, which mechanism as is well known receives its power from the propelling motor of the truck and is controlled by the operator of the vehicle, and the U. S. patent to Smight, No. 1,374,888 dated April 12, 1921 is here cited as an example of one such mechanism. A member 11 forming part of the body hoist mechanism has been shown but no particular details of the hoist mechanism has been shown as the invention does not reside in any special features of body hoist mechanism but is in the association of the hoist hereinafter described with the dump body of any suitable dump body type truck.

The hoist embodying the invention includes a mast or frame member 12, a jib or boom 13 pivotally mounted for vertical movement on a hinge pin 14 mounted in the lower portion of the mast, means for mounting the mast on the truck body at the front thereof, means for adjusting the boom relative to the mast, a hoist or load line 15, and means for operating said load line.

Referring to Figs. 1, 2 and 4, brackets or frame members 16 are secured to the side bars of the chassis 10 by hook bolts 16' or other suitable fastening means, said members having vertically disposed portions 17 that extend in front of the vehicle frame and are provided with inwardly extending angles 18 at their lower ends disposed below the truck frame and to which a cross frame member 19 is adjustably secured by bolts 20 mounted in said frame member 19 and in elongated slots 21 in said angles so that this supporting framework may be accommodated to

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suit vehicles having different widths of chassis frame.

The mast 12 is mounted to turn at its foot on the frame member 19 through a ball bearing journal 22 and is of a hollow tubular construction supported or braced intermediate its ends by a two part ring member 23 in which it is free to turn and which ring member is held in position by the inclined brace members 24 extending from said ring to a connection with bracket arms 25 secured to the frame members 16 and also by diagonally extending brace members 26 extending from the rear of said ring member to a point of connection at 27 with the side bars of the vehicle frame, see Figs. 1, 2, 4 and 6.

The jib or boom 13 is shown in Fig. 1 as formed of telescoping tubular members 28 and 29 which may be adjusted lengthwise of each other to vary the length of the boom by providing sets of holes 30 through any one set of which a locking pin 31 may be inserted.

A rope or cable 32 is secured to the upper part of the boom and extends down within the reach of the operator on the ground so that he may pull on it to swing the boom and mast to different angular positions.

The boom is adapted to be raised or lowered by means of a line or cable 33 connected to the upper portion of said boom, running over a pulley 34 supported on the upper portion of the mast and down around a manually operated drum 35 journalled in a support 36 mounted on the lower end of the mast and provided with a hand crank 37.

To lock the drums against rotation, oppositely disposed apertured arms or ears 38 project from one of the arms of the support 36 and a locking pin 39 is adapted to be inserted therein and through an opening 39' in the extended end of the drum shaft so that the boom through its connection with the cable 33 and drum construction above described may be held in the desired vertical position.

A housing 40 is secured to the upper portion of the mast and carries a pulley 41 over which the hoist line 15 passes, thence through an opening 42 into the interior of the mast, then around a pulley 43 mounted in a vertically movable block 44, then upwardly and around a pulley 45 supported in a block 46 suspended from a top plate 47 on the mast and thence downwardly to a dead connection at 48 with the block 44, the outer end of said cable passing over a pulley 49 on the outer end of the boom and carrying a hook 50 or other suitable means for connection to the load.

The block 44 is hollow and mounted to slide up and down on vertically disposed guide rods 51 disposed within the mast and secured to the opposite sides thereof by providing spacing sleeves 52 on the bent ends

53 of said rods which are threaded to take the clamping nuts 54, see Fig. 4, at their lower ends and connected at their upper ends by I bolts 52' in proper spaced relation with the mast. As shown in Fig. 5 the block 70 is of tubular form, the rods 51 passing through the same adjacent its inner wall and cooperating with guide straps 55 secured to the tube to guide the tube, the pulley 43 being pivotally mounted on a pin 56 carried in plates 57 secured to the tube and secured together below said tube by bolts 58 and carrying a bolt or pin 59.

A cable 60 is connected at one end to the pin 59, passes through a central passage 61 formed in the base of the mast, its journal and the cross frame member and over a guide pulley 62 mounted in a housing 63 carried by the frame member 19 back under the center of the truck body and around a guide pulley 64 85 and thence up to a point of connection at 65' with the forward end of the dump body 9.

The guide pulley 64 has its supporting pivot and housing mounted on the central portion of a cross frame member 65 carried by channel brackets 66 which are connected to the side bars of the vehicle frame by bolts 67 similar to the bolts 16' or any other suitable fastening means.

It is to be noted that the mast is mounted in the front of the truck and centrally of the same so that the boom projects forwardly of the mast can be swung through an angle of more than 180°. With the above construction, the raising and lowering of the dump body 9 will operate the cable 60 so as to cause the block 44 within the mast to be moved down or upwardly within the said mast. This movement of the block will, through the pulleys associated with the hoist cable 105 15 cause the cable either to be pulled in or let out so as to raise or lower the load suspended by the cable from the boom and during this operation, the boom may be swung from side to side through the manipulation 110 of the pull rope 32. Thus, it will be noted that through the raising and lowering of the dump body under the control of the operator through the mechanism provided for operating this dump body, that the hoist line is 115 controlled and operated thereby. While the line 60 could be a continuation of the hoist line 15, the use of the block and pulleys within the mast provides a multi-part hoist line arrangement which increases the power of the 120 hoist line and also the length of line available and hence is preferred.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the claims.

What I claim as my invention is:

1. In an apparatus of the character described, the combination with a motor driven truck having a tiltable dump body adapted 130

to be raised and lowered by hoist mechanism receiving power from the propelling motor of the truck of a hoist centrally mounted for rotative movement at the front of said truck,
5 including a boom and a hoisting line running over said boom, and means for operatively connecting said hoisting line with the dump body of the truck to operate said hoisting line through raising and lowering movements
10 of said dump body.

2. In an apparatus of the character described, the combination with a motor driven truck having a movable dump body adapted to be raised and lowered by hoist mechanism
15 receiving power from the propelling motor of the truck, of a hoist including a hollow mast centrally at the front of said truck, a boom mounted on said mast, a hoisting line running over the boom and extending into
20 said mast, and means extending centrally beneath the frame of the truck for connecting said hoist line with the dump body of the truck to operate said hoisting line through raising and lowering movements of said
25 dump body.

3. In an apparatus of the character described, the combination with a motor driven truck having a movable dump body adapted to be raised and lowered by hoist mechanism
30 receiving power from the propelling motor of the truck, of a derrick mounted on the front portion of said truck and a hoisting line suspended from the derrick and movable relative to the same and means connecting the
35 hoisting line with the dump body of the truck to operate the hoisting line to raise the load through the raising movement of the dump body and to lower the load on the lowering movement of the dump body.

40 In testimony whereof, I affix my signature.

GEO. W. BURGOYNE.

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