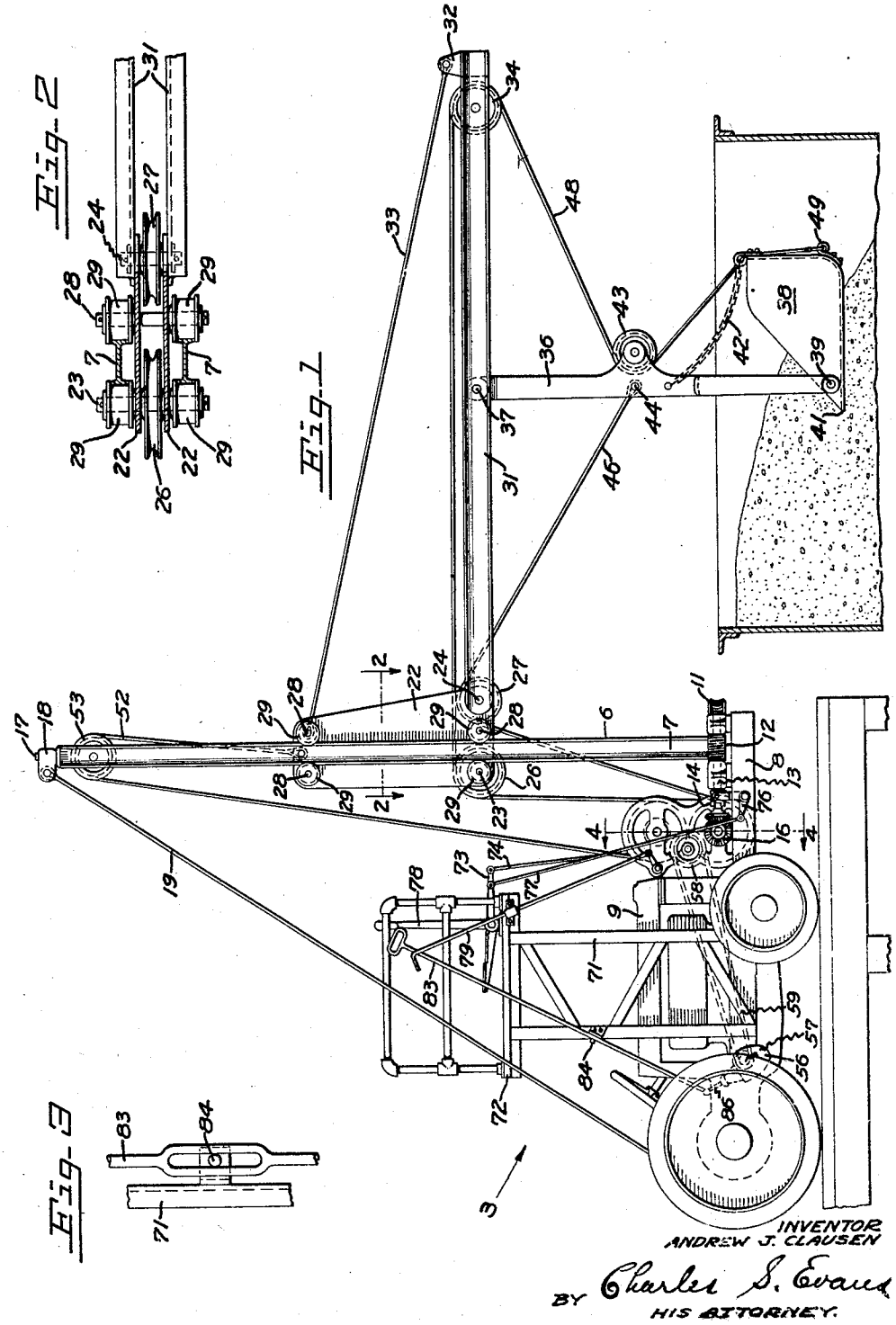
Feb. 18, 1930. A. J. CLAUSEN 1,747,698

SHOVELING MACHINE

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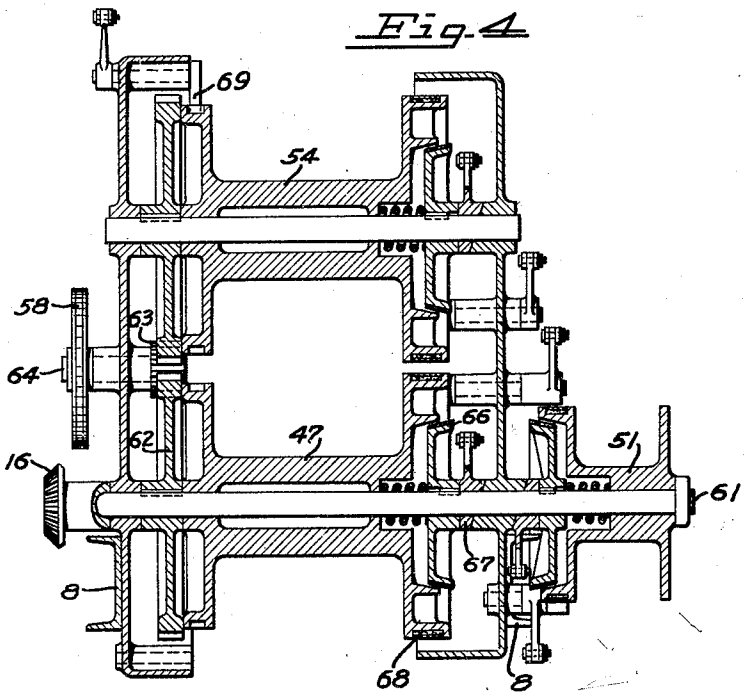


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Fig. 4




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# UNITED STATES PATENT OFFICE

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## SHOVELING MACHINE

Application filed October 4, 1927. Serial No. 223,869.

My invention relates to machines for unloading railway cars, and specifically to machines for removing loose materials such as gravel, sand or coal from gondolas.

An object of my invention is to provide a machine for this purpose which is portable and may be used without special tracks or platforms at any point at which it may be convenient to spot the car.

Another object is to provide a machine which may be mounted on a standard tractor.

Another object of my invention is to provide an unloading machine in which the gathering or collecting implement does not have to be accurately spotted over the material it is to carry, but can pick up its load even if it be unskillfully or inaccurately placed.

My invention possesses other objects and valuable features, some of which will be set forth in the following description of my invention which is illustrated in the drawings forming part of the specification. It is to be understood that I do not limit myself to the showing made by the said description and drawings, as I may adopt varying forms of my invention within the scope of the claims.

Referring to the drawings:

Fig. 1 is an elevation of my invention as applied to a tractor of well known make.

Fig. 2 is a sectional view of the carriage structure. The plane of section is indicated by the line 2—2 of Fig. 1.

Fig. 3 is a detail in elevation of a portion of the transmission control lever. The direction in which the view is taken is indicated by the arrow 3 of Fig. 1.

Fig. 4 is a sectional view of the winch mechanism, the plane of section being indicated by the line 4—4 of Fig. 1.

Broadly considered, my invention comprises a mast provided with a vertically movable boom. A link pivoted beneath the boom carries a swinging scoop. Boom and scoop are manipulated by cables which are handled by the drums of a power driven winch, and means are also provided for rotating the boom about a vertical axis. The whole may be mounted on a tractor, with an operating station at which the controls are centralized. When so mounted my shoveling machine is especially useful for unloading freight cars of the gondola type.

It has been customary in machines of this character to use "clam-shell" buckets to pick up and move the load. A clam-shell bucket is suspended from cables and must be accurately spotted over the load it is to lift. It is then dropped onto its load, the shells biting into the material much as one bites into an apple. In my device, I employ a scoop which is spotted near the material to be raised and is then swung into or under it. No such accuracy of placement is necessary as with the clam-shell, and when the car is nearly empty the remnants can be scraped up in a much more satisfactory manner.

Describing a preferred form of my machine in terms of greater detail, a mast 6 comprising the I-beams 7 is journaled on the frame 8, bolted to the chassis of the tractor 9.

At its lower end the mast carries the worm wheel 11, engaging the worm 12, which is keyed to the shaft 13, and is adapted to be driven through the jaw clutch 14 and the miter gears 16 to rotate the mast about its own axis. At the upper end of the mast the pivot 17 is journaled in the bearing block 18, to which are attached the backstays 19. The lower ends of the backstays are attached, one on each side, to the tractor frame.

The I-beams forming the mast, serve as a trackway for a carriage, comprising the plates 22, spaced apart by the fixed shafts 23 and 24 to permit the sheaves 26 and 27 to be journaled on the shafts between the plates. The carriage is provided with three shafts 28, which together with shaft 23, extend through both plates, and on the outer ends of which are journaled the flanged supporting

rollers 29 adapted to roll along the flanges of the I-beams.

The shaft 24 also serves as a support for the inner end of the boom 31 comprising spaced channels, the outer or distal ends of which are secured together upon the fitting 32, which also provides an eye to which is connected the stay 33 extending from the upper end of the carriage. Journaled between the channels at the distal end of the boom is the sheave 34; and mesially of the boom the link 36 is suspended from the pivot pin 37.

The lower end of the link is forked to embrace the scoop 38 which is pivoted in the bearings 39 within the fork adjacent its entrant or leading edge 41. The swing of the scoop is limited by the chain 42 connected from the link to the following edge. Near the middle of the link on its distal side, the sheave 43 is journaled, and on its proximal side is attached the cable 46.

Cable 46 passes from the link over the sheave 27, to the lower or main drum 47 of the winch. A second cable 48 passes from its point of attachment in the eye 49 at the bottom of the scoop, over sheaves 43, 34 and 26, to an auxiliary drum 51, mounted on the same shaft as drum 47, and a third cable 52, attached near the top of the carriage, passes over the sheave 53 adjacent the top of the mast, to the upper drum 54 of the winch.

Power from the tractor motor is supplied to the winch mechanism by means of the transmission or reversing gear set 56, the sprockets 57 and 58, and the chain 59. Means are provided for connecting the sprocket 58 with the winch drums, comprising a known type of gearing and clutch mechanism. Thus the drum 47 is journaled on the shaft 61 which is driven by the gear 62 meshing with the pinion 63 on the sprocket shaft 64. The clutch 66, actuated by the thrust cam 67 serves optionally to engage the drum 47 for rotation with the shaft or to release it therefrom. The band brake 68 is operative to retard or prevent motion of the drum when released from the shaft.

Similar mechanism is provided for the auxiliary drum 51 and the upper drum 54. This latter drum, controlling vertical movement of the boom, is also provided with the ratchet and pawl 69 permitting the positive locking of this drum without recourse to the brake.

Mounted on the chassis of the tractor above the motor is the frame 71 which supports the platform 72. On this platform all of the controls for operating the machine are centralized. The clutches and brakes, which control the winch mechanism are operated by a series of pedals 73 and connecting rods 74. The clutch mechanism for rotating the mast is actuated by the crank 76, connecting rod 77 and lever 78. The handle 79 is operably connected with the pawl 69 for locking or releasing the drum 54.

The loop-handled lever 83 controls the transmission 56. This lever is slotted near its center as is shown in Fig. 3, to allow sliding as well as angular movement about the fulcrum 84 thereby permitting the transmission lever 86 to be moved in the two dimensions necessary for its operation.

In use the tractor is driven close to the car to be unloaded. By proper manipulation of the controls the boom is raised, swung into place, and lowered, the scoop is tilted entrant edge down, and is then pulled into and through the material. The points of suspension are such that it maintains its load bucketwise until it reaches the forward limit of its swing, where it is brought to dumping position by the raising of the rear edge. The link may then be retracted to bring the scoop again into position to swing into its load and the operation repeated.

The vertical movement of the boom and the rotational movement of the mast may be employed at any time to bring the scoop within range of fresh material, and in this way a wide area may be covered. At the same time the mobility of the tractor makes it possible to bring the machine within reach of material beyond the immediate range of the boom.

I claim:

1. In a shoveling machine having a boom, a link pivotally connected to the boom, a scoop pivotally connected adjacent its entrant edge to the link, a sheave journaled mesially of the link, and a cable connected to the scoop and roven over the sheave for retracting the link and dumping the scoop.

2. In a shoveling machine having a boom, a link pivotally connected to the boom, a scoop pivotally connected to the link, and cables for advancing and retracting the link applied thereto adjacent its center.

3. In a shoveling machine having a boom, a link pivotally connected to the boom, a scoop pivotally connected to the link, a sheave journaled adjacent the end of the boom, a sheave journaled mesially of the link, and a cable roven over said sheaves and connected to the scoop for retracting the link and dumping the scoop.

4. In a shoveling machine having a boom, a link pivotally connected to the boom, a scoop pivotally connected to the link, a sheave journaled adjacent the end of the boom, a sheave journaled mesially of the link, and a cable roven over said sheaves and connected to the bottom of the scoop for retracting the link and dumping the scoop.

5. In a shoveling machine having a boom, a link pivotally connected to the boom, a scoop pivotally connected adjacent its entrant edge to the link, a sheave journaled mesially of the link, a sheave journaled at one

end of the boom, and a cable roven over said sheaves and connected to the bottom of the scoop for retracting the link and dumping the scoop.

6. In a shoveling machine having a boom, a link pivotally connected to the boom, a scoop pivotally connected adjacent its entrant edge to the link, a sheave journaled mesially of the link, a sheave journaled distally of the boom, and a cable roven over said sheaves and connected to the bottom of the scoop for retracting the link and dumping the scoop.

In testimony whereof, I have hereunto set my hand.

ANDREW J. CLAUSEN.