Dec. 30, 1930. W. K. LIGGETT 1,786,665

PORTABLE UNLOADING MACHINE

Filed June 8, 1923

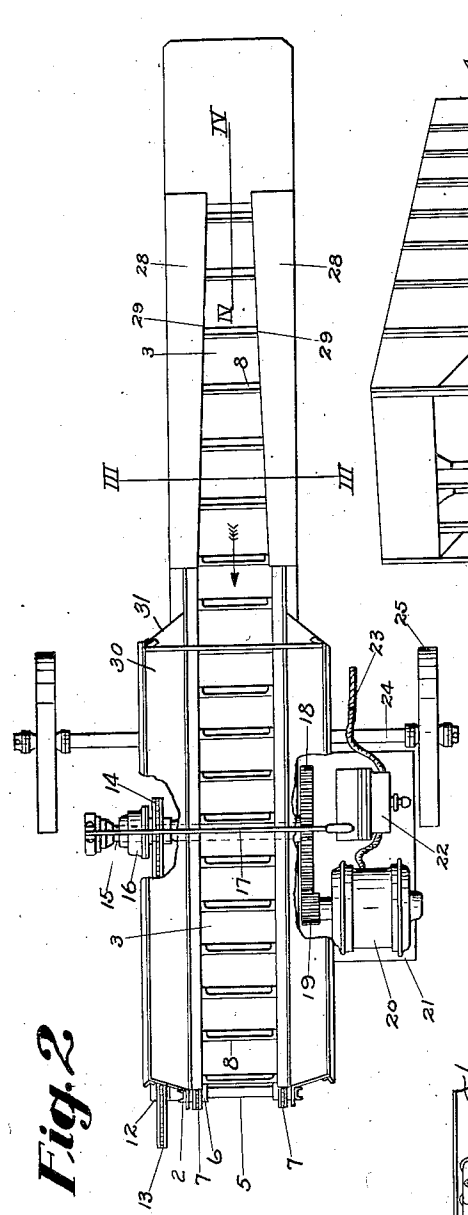


Fig. 2

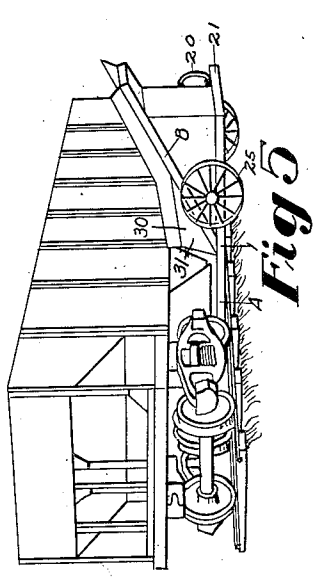


Fig 5

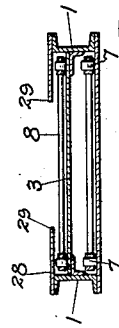


Fig 3

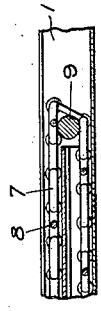


Fig. 4

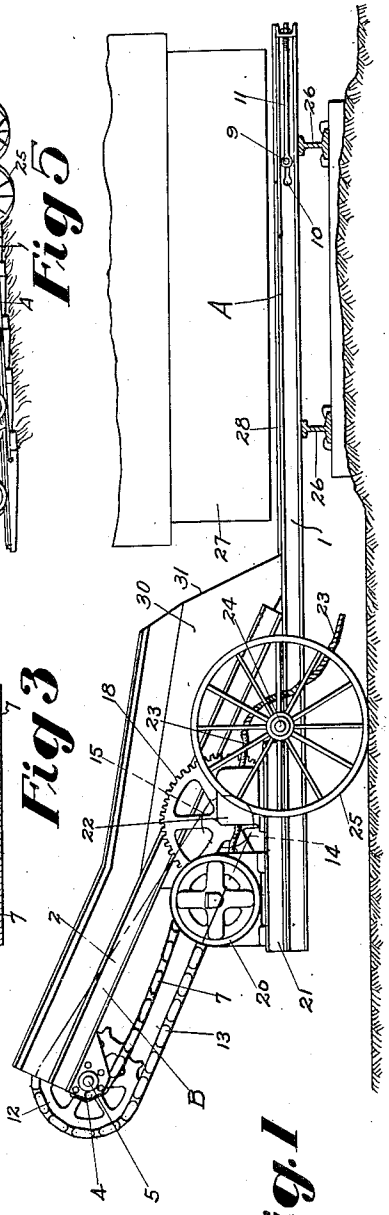


Fig. 1

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UNITED STATES PATENT OFFICE

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PORTABLE UNLOADING MACHINE

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The present invention relates to certain new and useful improvements in portable unloading machines, and particularly to that class of unloading machines which is adapted to receive material discharged from any container or receptacle, as, for example, the hopper in the floor of a railway car and transfer it to an elevated discharge point convenient for its delivery to any desired point, as, for example, to suitably positioned wagons or trucks.

I am aware that numerous portable conveying machines have been proposed which were adapted to be positioned beneath a railway car, to receive material from the hopper in the floor of said car. However some of such devices with which I am familiar require the removal of one or more cross ties, the excavation of a pit or trench under the track and the positioning of the conveyer in said pit beneath the track rails. Other devices for doing this work are made up of separate conveying and elevating units, which must be independently positioned, then coupled for operation, and then disconnected for removal.

It is the especial object of this invention to provide a portable unloading machine adapted to be conveniently moved from place to place, and to extend above the track rails beneath the hopper bottom of a gondola to receive material therefrom and transport it to an elevated discharge point convenient for its delivery into a suitably positioned wagon or truck. Furthermore, the machine herein disclosed is of the single unit type, in that its receiving and conveying portion and its elevating portion are permanently connected, and may be positioned and withdrawn without the necessity of disconnecting them. In the preferred form, and as herein disclosed, a single conveyor element is provided, which effects both the withdrawing of the material from beneath the car or other receptacle, and also the elevating of the material withdrawn to be delivered at a higher point.

The means whereby I attain this object are fully set forth in the following specification and illustrated in the accompanying drawings of which—

Fig. 1 is a side elevation of the preferred embodiment of my invention.

Fig. 2 is a plan view of the machine illustrated in Fig. 1.

Fig. 3 is a cross section taken along the line III—III of Fig. 2.

Fig. 4 is a longitudinal section taken along the line IV—IV of Fig. 2.

Fig. 5 is a perspective view showing the operative relation of my improved portable unloading machine with a hopper bottom gondola of the type commonly used for the transportation of coal.

Like numerals refer to similar parts in the several figures.

My improved unloading machine comprises a wheel mounted self-contained conveyer having a horizontal section "A" adapted to rest upon the rails of a railway track beneath the discharge hopper in the floor of a gondola, in position to receive material therefrom, and an inclined section "B" adapted to elevate said material to a position suitable for discharge into a truck or other suitable receptacle for further disposition.

As shown in the drawings the operative parts of the machine are mounted upon a main frame having side sills formed of two parallel horizontally extending channel bars 1 joined together by suitable plates and bars to form a frame of relatively small vertical dimensions having extreme stiffness in that direction. Attached to the side sills 1 near their rearward ends are two upwardly inclined channel bars 2, and to the bars 1 and 2 is attached the transversely extending trough plate 3 which constitutes the bottom of the conveyer trough and is preferably one continuous plate extending from the elevated end of the bars 2 to the forward end of the side sills 1. Fixed to the channel bars 2 at their rearward ends are journal bearings 4 in which are journaled the head shaft 5 having sprocket wheels 6 arranged to engage and actuate the material moving element of the conveyer. This material moving element comprises two matched endless chains 7 which

are connected together at intervals by the scraper cross bars 8. The chains 7 pass around a foot shaft 9 which is slidably supported in slots 10 formed near the forward end of the channel bars 1. The foot shaft 9 is also engaged by the eye bolts 11 which are provided with any suitable means, as, for example, nuts threaded to the ends of the rods to draw the shaft forwardly of the conveyer to tension the chains 7 in the manner well understood in the conveyer practice. Fixed to the head shaft 5 is a sprocket wheel 12 connected by the endless driving chain 13 with the sprocket wheel 14 mounted upon the power shaft 15. A suitable friction clutch 16 is arranged to connect the sprocket wheel 14 with said power shaft, and a controlling rod 17 extending transversely of the machine affords convenient means accessible from either side of the machine for the operation of said friction clutch. The power shaft 15 is connected by the gears 18 and 19 with a motor 20 mounted upon the platform 21 which is supported on that horizontal rearward extension of the main frame which extends beneath the inclined bars 2 constituting the inclined conveyor frame. The motor 20 may be of any preferred type suitable to the conditions under which the machine operates. For purposes of illustration I have shown an electric motor provided with a controlling switch 22 and arranged to receive its actuating current through a flexible conductor cable 23 from any convenient source of electric supply, but as these devices are well understood in the art and form no part of the present invention, further description is not thought to be required at this time.

Attached to the machine frame adjacent its center of gravity to properly balance the supported parts is a transversely extending axle 24 having ground engaging wheels 25 upon which the machine is supported, and upon which it may be conveniently moved from one working place to another.

The channel bars 1 constitute the sides of the conveyer trough, and they are of such vertical dimensions that the horizontal section "A" of the conveyer may be inserted between the tops of the track rails 26 and the bottom of the hopper 27 of a gondola, while they afford sufficient stiffness to support the material discharged from said hopper without material deflecting. When the discharge gate of the hopper 27 is opened, material from the gondola falls directly upon the conveyer, and at such times the entire length of the horizontal portion "A" is buried beneath a mass extending to the top of the car. The weight of material thus bearing directly upon the trough tends to choke the conveyer and subject the chains 7 to excessive strain. To relieve this strain, and prevent the destruction of the material moving elements of the conveyer, I have provided shield plates 28 attached to the channel bars 1 and extending inwardly above the scraper bars 8. The inner edges 29 of these shield plates 28 diverge in the direction of movement of the material thereby forming an expanding throat, the increasing capacity of which permits material to be dragged from the mass without excessive strain upon the conveyer chains.

It will be observed from Figure 5 that when the device is in position, the sides 30 of the elevating conveyor are extended upwardly vertical and can be brought close to the car and its hopper bottom, the front edges 31 being preferably inclined, as shown, so as to permit a close relation of the sides of the elevating conveyor to the car. With this arrangement, it will be seen that danger of the material withdrawn from the hopper by the horizontal conveyor portion of the machine escaping at the sides of that conveyor is eliminated, and the upwardly extending sides 30 of the elevating portion will confine the material and direct it to the elevating conveyor.

What I claim is:—

1. In a machine of the class described, the combination of a conveyor trough, means to propel material along said trough, and horizontally disposed rearwardly diverging material supporting shields extending inwardly over said trough in close relation to said propelling means.

2. In a machine of the class described, the combination in a self-contained power actuated conveyer, of an elongated flat thin horizontally extending portion adapted to extend across and rest upon the track rails beneath the discharge hopper of a gondola to receive material therefrom, an inclined portion adapted to transport said material to an elevated discharge point, and horizontal rearwardly diverging shield plates above the horizontal portion of said conveyer and disposed to relieve the conveyer from some of the weight of the material as and for the purpose set forth.

3. In a machine of the class described, the combination of an elongated frame comprising parallel side sills and a transversely extending trough plate attached thereto, of material engaging cross bars arranged to travel longitudinally of said trough plate, means to actuate said cross bars, and rearwardly diverging horizontally extending shield plates positioned above and partly shielding said cross bars as and for the purpose set forth.

4. In a machine of the class described, the combination of a trough, means to propel material along said trough, and a horizontally disposed rearwardly diverging material supporting means disposed above the trough.

5. A self-contained single unit portable unloading machine comprising the combination of a horizontal conveyor section including a pair of side rails, a pair of ground engaging wheels connected to the side rails at sub-

stantially the center of gravity of said machine, an inclined conveyor section rigidly secured to the rear end of said horizontal conveyor section, a single endless conveyor traversing said horizontal and inclined conveyor sections, the side rails of said horizontal section being extended rearwardly and disposed beneath said inclined section, and a motor for actuating said endless conveyor supported upon said extension of said side rails.

In testimony I have hereunto set my hand.

WILLIAM KELSEY LIGGETT.