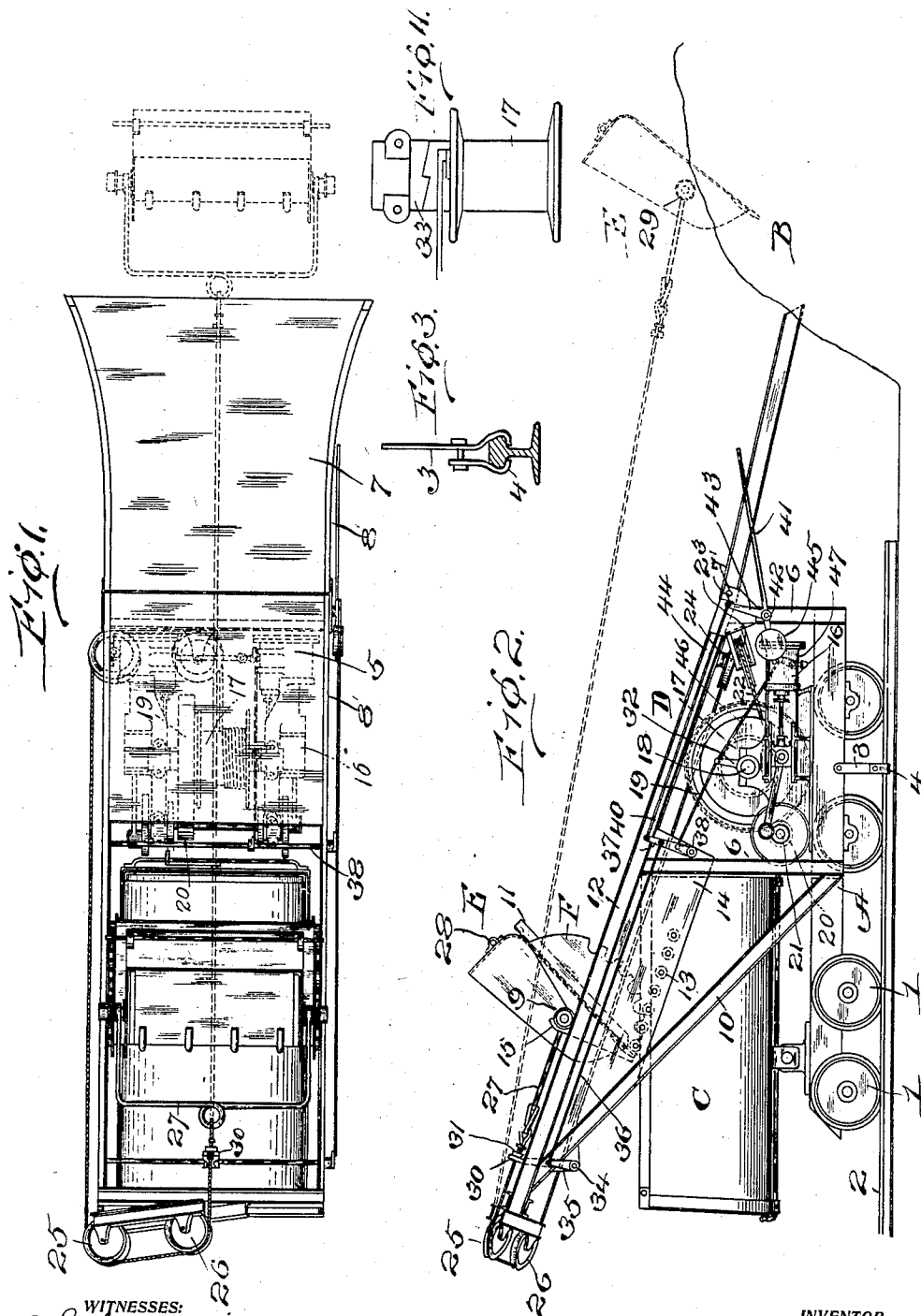


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ORE LOADER.
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Patented May 14, 1912.



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ORE-LOADER.

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To all whom it may concern:

Be it known that I, NELS P. FLODIN, a citizen of the United States, residing at Marquette, in the county of Marquette and State of Michigan, have invented certain new and useful Improvements in Ore-Loaders, of which the following is a specification.

This invention relates to a loading apparatus, whereby ore or other material can be loaded from a pile on the ground to a car on which the apparatus can be mounted, or which may be brought up to the apparatus in car loading relation thereto.

The invention has for one of its objects to improve and simplify the construction and operation of car loading machines so as to be reliable and efficient in use, readily controlled, and capable of transferring material from the pile to the car with great rapidity and requiring a minimum number of operators to operate the machine.

Another object of the invention is the provision of an inclined way or plane which has its lower or receiving end disposed at the pile of ore or other material to be loaded, and its upper end in overhanging relation to the car body, and in connection with this way or plane, a shovel or scoop is drawn up the same by an engine-driven drum and cable to the top of the plane where the shovel passes upon an automatically tilted cradle or dumping device, the shovel being carried back to the pile manually for receiving another load.

Another object of the invention is the employment of means for automatically opening the clutch that connects the cable winding drum with the engine when the shovel or scoop has reached dumping position at the upper end of the plane or inclined way.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, Figure 1 is a plan view of the machine showing the scoop or shovel in dumping position by full lines and in load-receiving position by dotted lines. Fig. 2 is a side view thereof. Fig. 3 is a detail sectional view showing the device for clamping the machine to the track

rail in fixed relation to the pile of dirt to be loaded on the car. Fig. 4 is a detail view of the clutch for the cable winding drum.

Similar reference characters are employed to designate corresponding parts throughout the views.

In the present instance, I have illustrated a loading machine as combined with the car body to be loaded, both the body and machine being mounted on a common truck-supported platform or frame. It is to be understood, however, that the machine can be mounted on its own base and the car to be loaded, such as an ordinary coal or dirt car, can be brought up to the same in loading relation thereto.

Referring to the drawing, A designates a car base or platform supported on wheels 1 that travel along the railroad track 2 that leads up to the pile B of ore or other material to be hauled away. On the platform A is mounted a load-receiving body C and the loading apparatus or machine D. The car is moved along the track into proper relation with the pile B, and after the load has been placed in the body C, the car is moved away to the point where the material is to be dumped or used. In loading the car body, the car is clamped to the track so that it cannot move with respect to the pile, and for this purpose, the platform A has a depending clamping device 3 fastened to the side thereof so as to be gripped to the rail of the track, the lower end of the device 10 having suitable rail-gripping jaws 4 that can be engaged with or released from the rail.

The loading apparatus D consists of an inclined plane 5 which is mounted on standards 6 fastened to the car platform. The lower part of the inclined plane or way includes an adjustable section 7 that is hinged at 7' to the main portion, so that the lower or receiving end of the way can be placed in proper relation to the pile B. The bottom of the plane or way may be made of sheet metal or the like and is flat or smooth, and at the edges are upstanding flanges 8 to prevent the shovel or scoop E from slipping laterally off the way, and also for forming rails on which rollers 9 on the sides of the scoop or shovel travel so as to minimize the friction between the scoop and way. The receiving or lower section 7 has its lower end flared so that the scoop can more readily enter the same. The main section of the

way terminates close to the inner end of the car body C, but the side beams or rails 8 continue considerably beyond this point in overhanging relation to the body C, so that the scoop or shovel can pass to a point approximately at the center of the body. The upper ends of the rails on the inclined way are held rigid by braces 10 that are secured to the platform A. In other words, the inclined way or track overhangs the body C, but the bottom of the way terminates short of the same.

Arranged over the body C is a tilting dumping device or cradle F which is in the form of a plate or platform 11 that is normally disposed in the same plane with the bottom of the main section 5, and the ends of this cradle are formed with segmental gears 12 that mesh with rollers 13 that are so disposed as to form racks parallel with the inclined plane or way but below the same. These rollers are attachments of vertical plates 14 which are pendent from the sides 8 of the way, and the cradle F is adapted to tilt on the rollers when the load is to be dumped from the shovel to the car body C. On the sides of the cradle are upwardly-extending lugs 15 that are normally disposed in the path of the rollers or wheels 9 on the sides of the shovel so that as the shovel ascends, the rollers will strike the stops and cause the cradle to tilt to the position shown in Fig. 2, and as a consequence, dump the material from the shovel that is, for the time being, carried by the cradle. It will be noted that when the cradle and shovel are in tilting position, the center of gravity is so disposed that the cradle will drop back to normal position so that the shovel can be moved down the inclined way or plane to receive another load.

The shovel or scoop E is adapted to be conducted up the inclined way by an engine 16 which is located on the car platform under the main section of the inclined way, and this engine drives a winding drum 17 on a shaft 18 that is connected by a gear wheel 19 with a pinion 20 on the crank shaft 21 of the engine. On the drum winds a cable 22 that passes around guide pulleys 23 and 24 fastened under the inclined way and thence passes along the outside of the inclined way to guide pulleys 25 and 26 at the upper end of the latter. The cable extends from the guide pulley 26 longitudinally of the inclined way and connects with a bail 27 fastened to the sides of the scoop or shovel. The shovel is provided with a handle bar 28 at its rear end whereby an operator can pull the shovel back to the pile, or, if desired, a rope can be attached to the bar 28 so that the operator can remain on the pile and draw the shovel back to loading position, the said rope being, of course, paid out as the shovel with its load is drawn up

the inclined way by the engine. It will be noted that the point of connection 29 between the bail 27 and shovel is so located that when the shovel is placed in the pile, as shown in Fig. 2, with its edge downmost, the draft on the winding cable will cause the shovel to take up its full load and pass from the pile on to the inclined way.

The winding drum is adapted to be automatically disconnected from the engine after the shovel is transferred from the bottom of the inclined way to the cradle and the cradle has moved to its tilted position. This is effected by means of a trip 30 located at the upper end of the inclined way in such position as to be engaged by a stop 31 on the cable, the said trip being operatively connected with the lever 32 of the clutch 33. The trip 30 is mounted on the rock shaft 34 that has a crank arm 35 which is connected by a rod 36 with the crank arm or lever 37 fastened to a shaft 38 supported on the side of the inclined way. On this shaft 38 is a crank arm which is connected by a rod 40 with the clutch lever 32. Obviously, when the trip 30 is tilted, the clutch lever will be thrown to position for disconnecting the winding drum from the engine. The clutch may be also operated by an operator's lever 41 that is fulcrumed at 42 on a suitable part of the frame of the machine, and this lever has an arm 43 connected by a rod 44 with the lever 37. The controlling lever may be provided with a counter-balance weight 45 so as to hold the clutch open when it has been moved to such position either manually or automatically. A rod 46 may lead from the clutch lever to the throttle valve 47 of the engine so as to cut off the steam at the same time the clutch is open, the throttle valve and clutch being both under the control of the operating lever 41 or the trip 30. After the clutch has been thrown open by the shovel having reached its dumping position, the clutch will remain open until the operator has drawn the shovel back to the pile, and when a signal is given, the engineer will close the clutch and open the throttle by manipulating the lever 41. In doing this, the shovel will be drawn downwardly into the pile to receive its load of material and it will then pass upon and move up the inclined way to be automatically dumped when it passes upon the cradle.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illus-

trative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. The combination of an inclined way, a scoop movable along the same, a tilting cradle upon which the scoop passes from the upper end of the way, a cable connected with the scoop, a winding device connected with the cable, an engine, a clutch between the engine and winding device, means for automatically opening the clutch after the scoop reaches the cradle and tilts therewith, and a throttle valve controlling means automatically operated with the clutch.

2. The combination of an inclined way, a scoop movable along the same, a tilting

cradle upon which the scoop passes from the upper end of the way, a cable connected with the scoop, a winding device connected with the cable, an engine, a clutch between the engine and winding device, means for automatically opening the clutch after the scoop reaches the cradle and tilts therewith, a throttle valve controlling means automatically operated with the clutch, and an operator's controlling lever operatively connected with the throttle and clutch.

In testimony whereof I affix my signature in presence of two witnesses.

NELS P. FLODIN.

Witnesses:

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