

May 21, 1963

W. B. NODWELL  
LOG LOADING MACHINE

3,090,510

Filed May 23, 1960

3 Sheets-Sheet 1

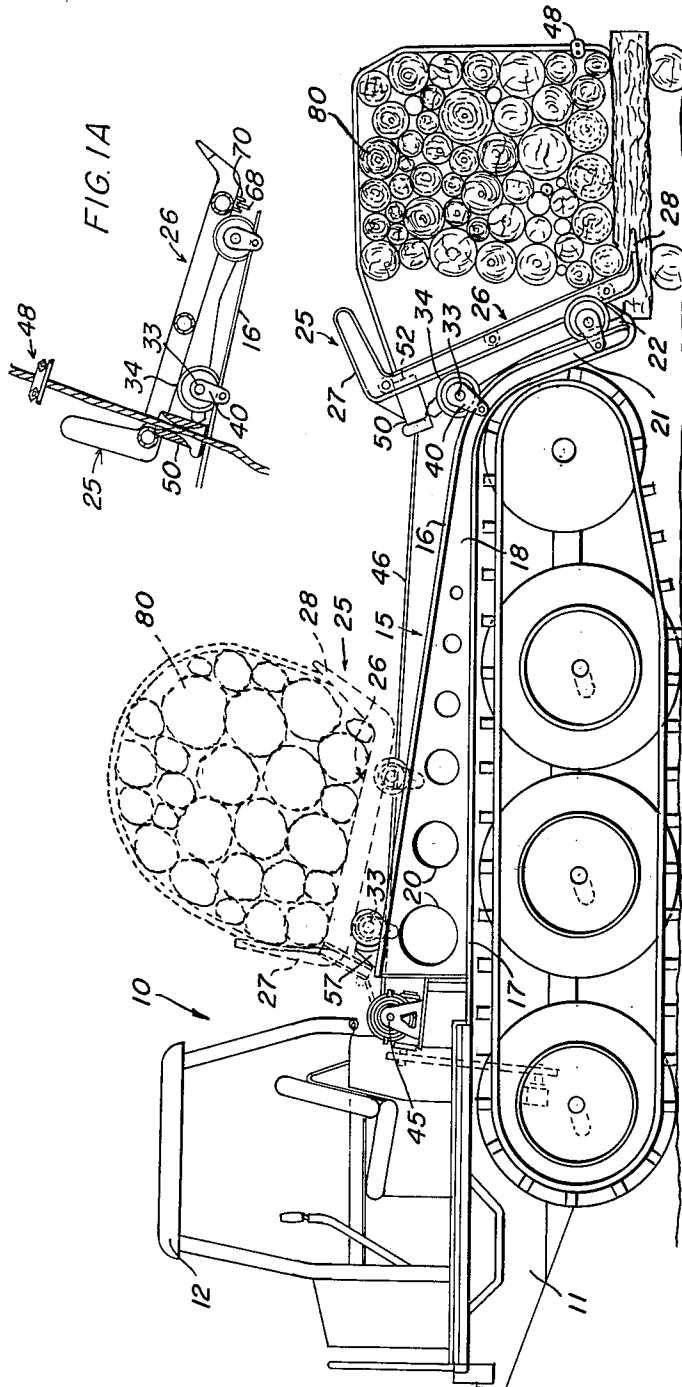


FIG. 1

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3 Sheets-Sheet 2

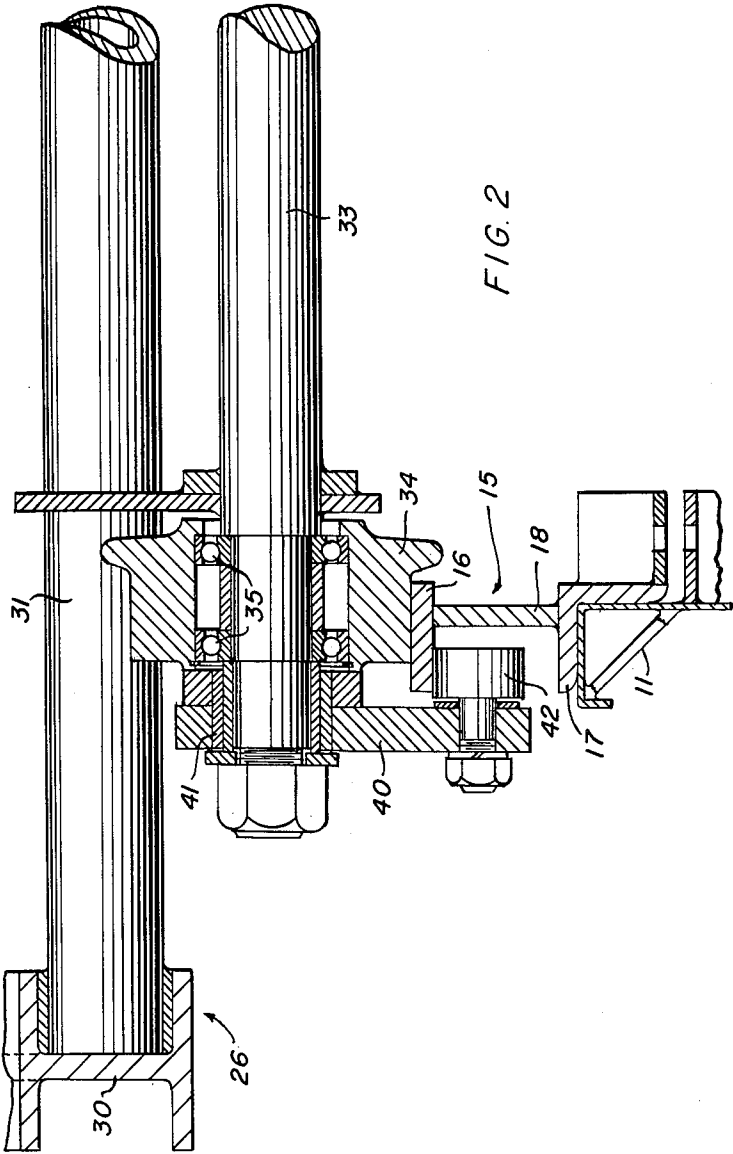


FIG. 2

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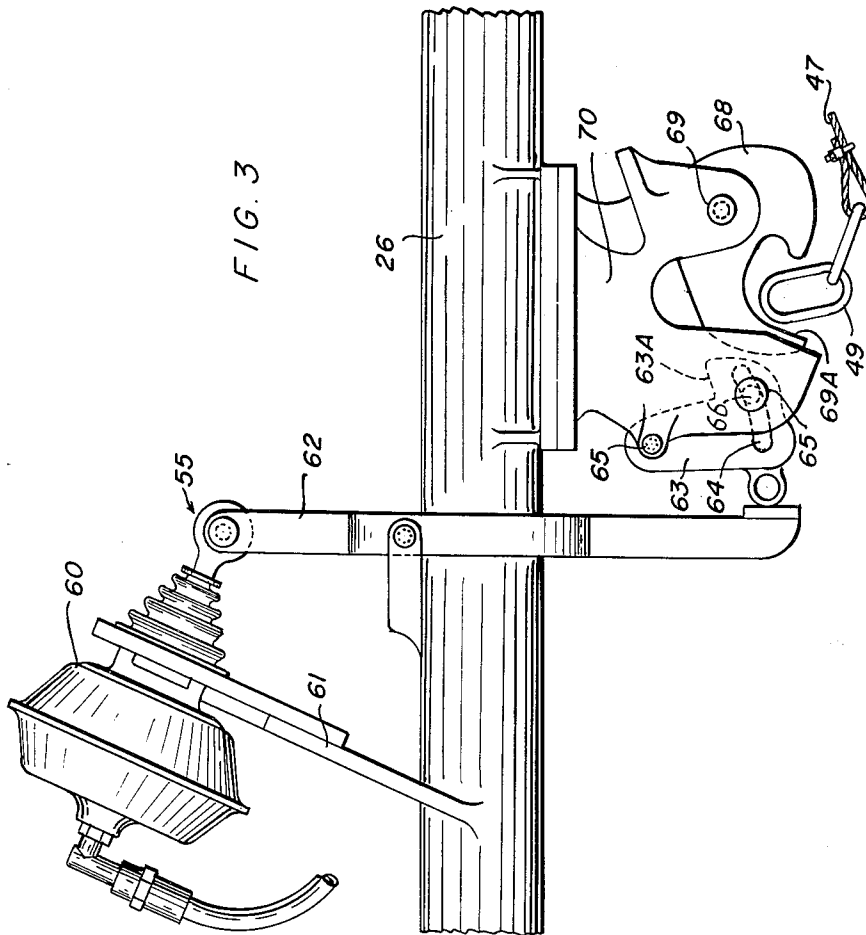
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1

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## LOG LOADING MACHINE

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5 Claims. (Cl. 214—85.1)

The present invention relates to loading devices and more particularly to log loading devices.

The invention finds particular application in the pulp and paper industry in areas in which logs have to be transported from the point of cutting to a central loading area adjacent to a road from where they can be loaded onto a truck and transported to a mill.

It is standard practice for a wood cutter to pile the cut logs in one cord piles (i.e. 4 ft. x 4 ft. x 8 ft.) thus providing a ready means of measuring production. The present invention is particularly useful for picking up such piles and transporting them to a central loading area with a minimum of labor and time.

According to the present invention a loading device comprises guide means mounted on a vehicle; a skip mounted for movement on said guide means; a winch; a cable, one end of which is attached to said winch, the free end being threaded through apertured means on said skip and being provided with means for operatively engaging the skip to move it along said guide means, the engaging means including a stop element adapted to engage with the apertured means to prevent the free end of the cable from unthreading therefrom.

Preferably the guide means comprises a pair of guide rails extending longitudinally of the vehicle in side by side spaced relationship thereon and being provided with downwardly depending terminal portions overhanging one end thereof.

Preferably each of the rails has an upper outwardly directed flange and a depending web portion and the skip is provided with a flanged wheel adapted to run on said upper outwardly directed flange and with guide rolls adapted to engage the underside of the upper outwardly directed flange.

In the preferred construction the guide rolls are mounted on levers which are pivoted to the wheel axles of the skip.

According to a further feature of the invention, the skip of the device has a base frame with an outstanding back stop and a scoop section outstanding from the front end thereof, the scoop section being substantially pointed at its extremity and adapted to fit beneath a stacked load to be lifted by the loading device.

The following is a description by way of example of one embodiment of the invention, reference being had to the accompanying drawings in which:

FIGURE 1 is a side elevation of a tracked vehicle with a log-loading device according to the present invention mounted thereon;

FIGURE 1A is a detail in cross-section of the skip as seen in FIGURE 1, the guide spool being indicated with the cable passing therethrough and with the stop element out of engagement with the spool;

FIGURE 2 is a sectional end view, looking from the rear of the vehicle towards the cab thereof, through part of the skip, one of its flange wheels, one swinging lever and roller, and the associated guide rail with its flange engaged; and

FIGURE 3 is a part detail of the locking means for the free end of the cable as seen from the right hand side in FIGURE 1 looking at the skip in the direction of the cab of the vehicle.

Referring now to the drawings, 10 generally indicates a tracked vehicle having a log loading device mounted thereon. The vehicle has a chassis 11 mounted on tracks.

2

An operator's cab 12 is provided at one end of the chassis. Extending longitudinally of the chassis and spaced apart thereon are a pair of guide rails 15. The guide rails each have upper and lower outwardly extending flanges 16 and 17 respectively united by a web 18. In order to reduce the weight of the rails the webs 18 thereof have holes 20 cut therein in the usual manner.

The web of each guide rail 15 is tapered to provide an inclined rail which has a downwardly depending terminal portion 21 overhanging the end of the vehicle chassis. The overhanging end is provided with a cradle end 22 at its outermost extremity.

Mounted for movement on the guide rails is a skip 25. The skip has a base frame 26 of skeletal configuration, an upstanding back stop portion 27 and a forward scoop portion 28. Preferably the skip is formed from a pair of side members 30 of H-shaped section united by cross tubes 31.

The skip 25 is provided with front and rear transversely extending axles 33 on which are mounted flanged wheels 34 in roller bearings 35. At the outer extremities of the axles there are mounted swinging levers 40 mounted in bearings 41 and adapted to carry rollers 42 which are arranged to engage with the underside of the upper flange 16.

Thus for normal movement along the rails 15 the skip travels on its flanged wheels 34 along the upper web 16 of the rails but when the skip reaches the loading position as shown on the right-hand side of FIGURE 1, the skip is restrained from leaving the rails by the action of the rollers 42 on the underside of the flanges 16.

Mounted on the chassis 11 directly behind the cab 12 of the vehicle is a winch 45. One end of a cable 46 is attached to the winch and the free end 47 of the cable is threaded through a guide spool 50. Adjacent the free end 47 of the cable and rigidly attached thereto is a stop element 48.

The guide spool 50 is cylindrical in nature and is rigidly secured to the skip 25 at the underside thereof adjacent its inner end. The mouth of the guide spool is arranged to form a seat 52 for the stop member 48 whereby to prevent the cable 26 from unthreading from the guide spool.

Attached to the skip 25 at its end remote from the guide spool, is a locking means 55, FIGURE 3, for releasably attaching the free end of the cable to the skip.

The locking means 55 is connected to one of the base frames 26 of the skip 25 and comprises generally a vacuum operated diaphragm member 60 attached to a bracket 61 which in its turn is attached to the frame 26; a lever 62 is pivoted centrally to the frame 26 and is attached at one end to an operated member on the vacuum diaphragm member 60 and at its other end to a latch element 63 which is pivoted at 65 on a bracket 70 which is attached to the frame 26.

The latch 63 is provided with a slot 64 through which a pin 66 passes. The pin 66 is secured to the bracket 70 and the limit of travel of the latch 63 is defined by the slot 64 and the pin 66.

Also swingably mounted at pivot 69 on the bracket 70 is a hook 68. The hook has a tail portion 69A which engages with the face 63A of the latch 63 to cause the hook 68 to retain the chain link 49 provided at the free end of the cable 47.

In operation the operator backs the vehicle up to a cord of wood generally indicated at 80 and stops several feet from the pile. He then operates the winch which pays out the cable 46 and permits the skip 25 to fall by its own weight along the inclined rail 15 and down onto the terminal portion 21 thereof, until the leading wheel of the skip engages with the cradle 22 and the skip is supported in that position. The operator then disengages the winch

and dismounts from the vehicle. He pulls the cable out over the top of the pile and by means of a rod pushes the free end of the cable under the logs at or about the mid point thereof. The operator then attaches the chain link 49 to the hitch member or hook 68, swings the hook about its pivot 69 to move the latch back against the bias of a spring (not shown) until the tip of the tail 69A passes the end point of the face 63A, the spring then returns the latch 63 to cause face 63A and tail 69A to engage and lock. Having remounted the vehicle, the operator backs the vehicle up to the pile and reengages the winch to draw in the cable so that the logs are drawn together and back against the skip. As the winch continues to wind in the cable, a point is reached where the logs are so firmly packed in place that the skip starts to raise along the rails and continues until the skip reaches its transportation position (as shown on the dotted lines in FIGURE 1) where it is prevented from going further by a stop member 57. Additional tension is applied to the cable to ensure that the logs are held in place and the vehicle then proceeds to an unloading area.

To unload the vehicle, the operator backs it to the point of unloading and starts paying out the cable so that the skip runs down the incline under gravity until it reaches the down position. The operator operates the vacuum diaphragm member 60 to rock the lever 62 and move the latch 63 against the spring bias thereby disengaging from the hook 68 and permitting the cable 47 to drop clear of the locking means 55. The operator then, by engaging the winch draws in the line until it is pulled from under the load. By drawing in additional line, the stop 48 engages its seat at 52 in the guide spool 50 and additional operation of the winch draws the skip back up onto the vehicle. The operator is then in a position to proceed to reload.

It will be observed that the present invention permits the operation of the device by one operator who has to dismount from the vehicle only once during a loading and unloading cycle and enables the vehicle to travel in a loaded condition such that efficient vehicle performance is obtained.

In the following claims, reference has been made to "cable" and this term is to be understood to include a wire, chain or rope cable, or the like.

What I claim as my invention is:

1. A loading device comprising guide means mounted on a vehicle; said guide means having a downwardly depending terminal portion overhanging one end of the vehicle; a skip adapted for travel on said guide means between an inner transportation position and an outer loading position; a winch; a cable, one end of which is attached to the winch, the free end being threaded through apertured means on the skip and being provided with a stop element adapted to engage with the apertured means to prevent the free end of the cable from unthreading therefrom; and connecting means on said skip adapted to releasably secure the free end of the cable to the skip;

the skip being arranged for travel from its loading position to its transportation position under the winding-in action of the cable through, in the unloaded condition, the cooperative engagement of the stop element and the apertured means, and in the loaded condition, the cooperative engagement of the secured said free end of the cable, passed restrainingly over a load to be carried, and said connecting means.

2. A loading device comprising a pair of transversely spaced apart longitudinally extending guide rails mounted on a vehicle and being downwardly inclined throughout their length to terminate in an overhanging downwardly depending outer portion and each rail having an upper downwardly directed flange and a depending web portion; a skip mounted for travel on said rails, on flange engaging wheels mounted on axles, between a loading position at the outer portion and a transportation position adjacent the inner ends of the rails, swinging levers pivoted to said axles at the outer extremities thereof and carrying the guide rolls adapted to engage the underside of the flanges; a winch; a cable, one end of which is attached to the winch, the free end being threaded through apertured means on the skip and being provided with a stop element adapted to engage with the apertured means to prevent the free end of the cable from unthreading therefrom; and connecting means on said skip adapted to releasably secure the free end of the cable to the skip; the skip being arranged for travel from its loading position to its transportation position under the winding in action of the cable through; in the unloaded condition, the cooperative engagement of the stop element and the apertured means, and in the loaded condition, the cooperative engagement of the secured said free end of the cable, passed restrainingly over a load to be carried, and said connecting means.

3. A device as claimed in claim 2 in which the extremity of the terminal portion is provided with a cradle member adapted to engage wheels of the skip and support it whilst in loading position.

4. A device as claimed in claim 1 in which the connecting means comprises a power-operated hooking element adapted to receive the free end of the cable and retain it thereon against the action of the winch and, on operation, to release the cable, the hooking element being located adjacent the end of the skip remote from the apertured means.

5. A device as claimed in claim 4 in which apertured means are located near the inner end of the skip.

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