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JACK ASSEMBLY FOR TRACK LOADERS

Filed Nov. 23, 1951

2 Sheets-Sheet 1

Fig. 1.

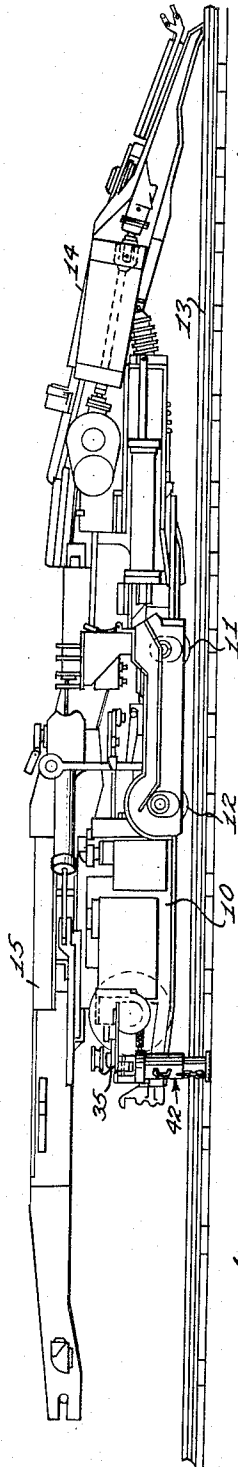


Fig. 4.

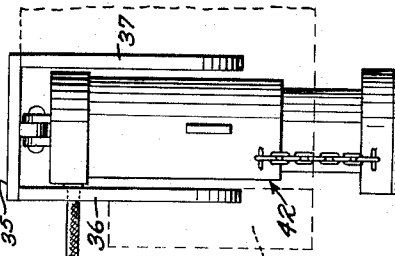
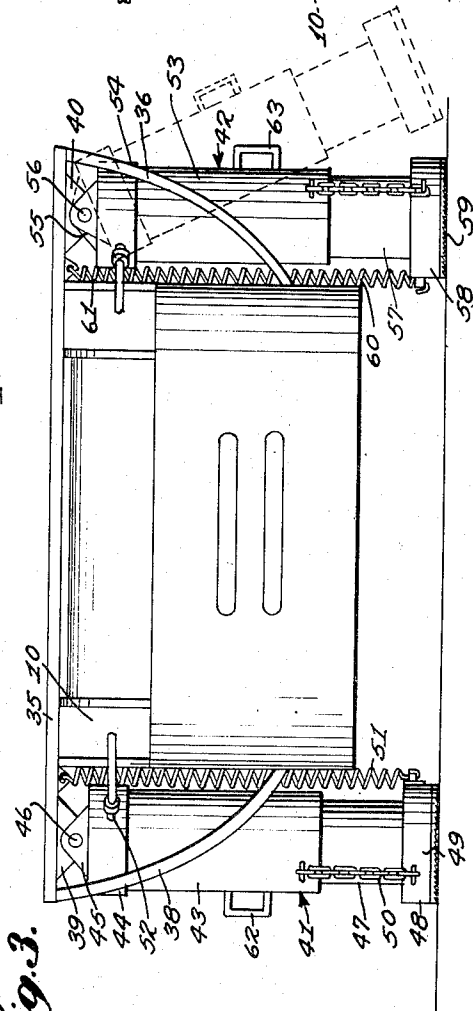


Fig. 3.



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Fig. 2.

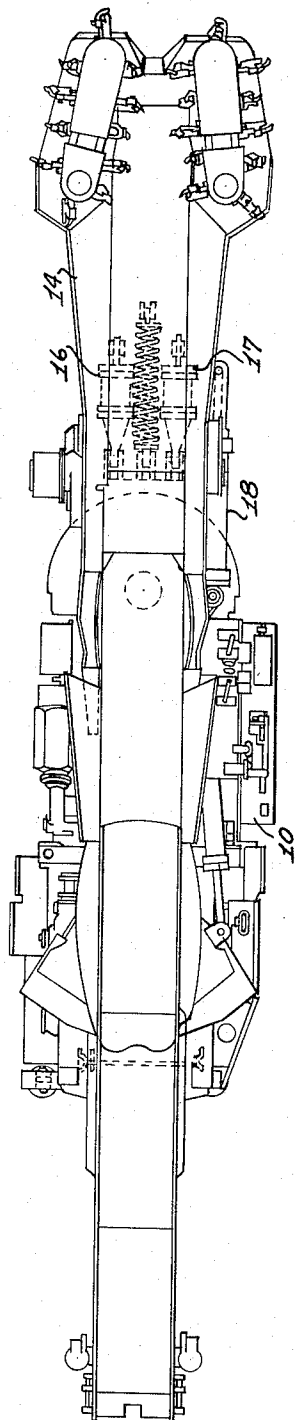
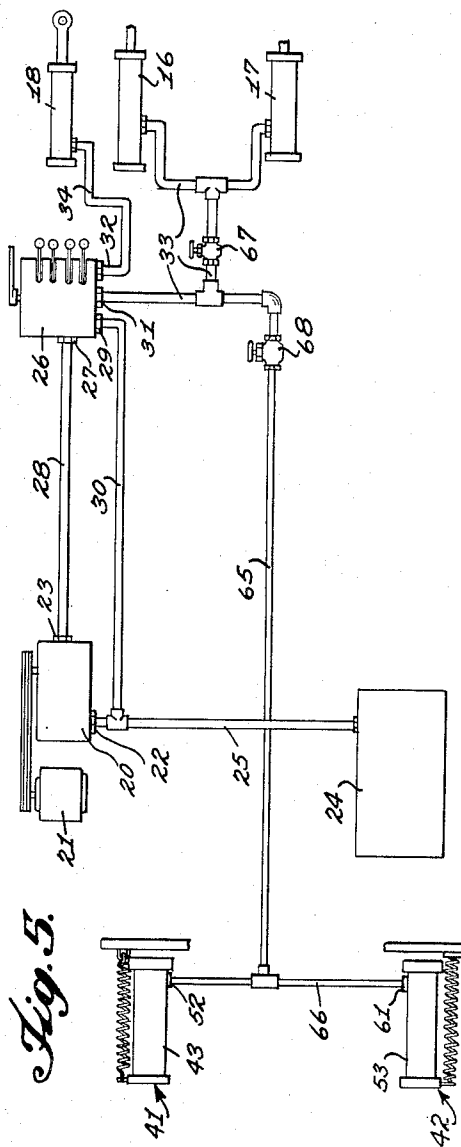


Fig. 5.



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JACK ASSEMBLY FOR TRACK LOADERS

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4 Claims. (Cl. 104-263)

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This invention relates to a track loader having a jack assembly for rerailing the rear truck of the loader in the event of derailing thereof.

It is among the objects of the invention to provide an improved jack assembly for a track loader which includes hydraulic jacks mounted on the loader one at each side of the rear end thereof for raising the rear truck of the loader back onto the rails in the event the rear truck becomes accidentally derailed; which includes means providing pivotal connection between the jacks and the loader, so that the jacks can be set to move the rear end of the loader sidewise as may be necessary, as well as to raise the rear truck; which includes means connecting the hydraulic jacks to the hydraulic system of the motor for supplying hydraulic fluid under pressure to the jacks; and which assembly can be installed on an existing track loader with no material modification of the loader construction.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawings, wherein:

Figure 1 is a side elevational view of a track loader with a hydraulic jack assembly illustrative of the invention operatively mounted thereon;

Figure 2 is a top plan view of the track loader and hydraulic jack assembly shown in Figure 1;

Figure 3 is a somewhat diagrammatic rear elevational view of the loader and jack assembly showing the jacks in operative position;

Figure 4 is an end elevational view of the jack assembly illustrated in Figure 3; and

Figure 5 is a diagrammatic illustration of the hydraulic system of the loader and jack assembly.

With continued reference to the drawings, the loader includes an elongated frame 10 supported at a point intermediate its length on front and rear wheeled trucks 11 and 12 which rest on the rails of a track 13, a gathering head 14 movably mounted on the frame at the front end of the latter and projecting forwardly from the frame, and a rear conveyor 15 mounted on the frame and extending rearwardly thereof. A pair of hydraulic devices 16 and 17 are connected between the front portion of the frame and the gathering head 14 to impart up-and-down movements to the gathering head and at least one hydraulic device 18 is connected between the frame and the gathering head to impart lateral or sideways movement to the gathering head.

A hydraulic pump 20 is mounted on the frame

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10 and driven by the main electric motor 21 of the loader, which pump has an inlet 22 and an outlet 23, and a hydraulic fluid reservoir or sump 24 is connected to the pump inlet 22 by a conduit 25.

A main control valve 26 has a pressure inlet 27 connected to the outlet 23 of the pump by conduit 23, and has a vent or drain outlet 29 connected to the reservoir 24 through the conduit 25 by a conduit 30. The valve 26 has a number of independent pressure outlets, as indicated at 31 and 32, the outlet 31 being connected by a branched conduit 33 to both of the hydraulic devices 16 and 17, and the pressure outlet 32 being connected by a conduit 34 to the hydraulic device 18.

As track loaders of the character indicated are well known to the art, further illustration and description of the track loader itself is considered unnecessary for the purposes of the present disclosure.

The hydraulic jack assembly of the present invention includes a support beam 35 extending across the upper side of the loader frame 10 at the rear end of the frame and projecting at its ends beyond the respectively opposite sides of the frame. Diagonal braces are secured to the support beam 35 at the ends thereof, and to the frame 10 at locations below the corresponding ends of the support beam.

These braces comprise longitudinally curved bars of substantially rectangular cross-sectional shape and are arranged in pairs disposed one pair at each end of the support beam 35. As illustrated in Figures 3 and 4, the braces 36 and 37 disposed at the right-hand end of the support beam, as viewed in Figure 3, are connected each at one end to the support beam and each at its other end to the loader frame 10 and extend downwardly from the corresponding end of the support beam in spaced apart and substantially parallel relationship to each other. Two corresponding braces are provided at the other end of the support beam, one being illustrated in Figure 3 and indicated at 38.

Apertured lugs 39 and 40 depend from the support beam 35 near the opposite ends and adjacent the mid-width location of the support beam, and hydraulic jacks, as generally indicated at 41 and 42 are disposed one under each overhanging end portion of the support beam 35 and between the corresponding diagonal braces, as is clearly illustrated in Figure 4 for the jack 42.

The hydraulic jack 41 comprises a cylinder 43 having an open lower end and a fixed cap 44 closing its upper end. Spaced apart, apertured lugs 45 project perpendicularly from the end wall of the cap 44 and are disposed one at each side of the lug 39 depending from the support beam 35, and a pivot pin 46 extends through the apertures in the lugs 39 and 45 to pivotally connect the jack 41 to the support beam for swinging movements toward and away from the adjacent side of the frame 10 of the loader.

A piston 47 is reciprocally received in the cylinder 43 and projects at one end from the open end of the cylinder, and a foot formation 48 having a roughened or serrated outer surface 48' is provided on the end of the piston 47 disposed outwardly of the cylinder 43. A chain 50 is connected at one end to the foot formation 48 and at its other end to the cylinder 43 to limit movements of the piston 47 outwardly of the cylinder, and a return spring 51 is connected at one end to the foot formation 48 and at its other end to the support beam 35 to resiliently urge the piston inwardly of the cylinder. A hydraulic conduit fitting 52 is mounted on the cylinder end or cap 44 and communicates with the interior of the cylinder between the closed end of the latter and the adjacent end of the piston 47.

The jack 42 comprises a cylinder 53 having one end closed by an end cap 54 provided with upstanding and spaced apart, apertured lugs 55 which are disposed one at each side of the lug 40 depending from the support bar 35, and a pivot pin 56 extends through the lugs 55 and 40 to pivotally connect the upper end of the cylinder 53 to the support bar 35. A piston 57 is reciprocally received in the cylinder 53 and projects at one end from the open end of the cylinder, and a foot formation 58 having a rough or serrated outer surface 58' is provided on the end of the piston 57 projecting out of the cylinder 53.

A chain 59 is connected between the cylinder 53 and the foot formation 58 to limit movements of the piston 57 outwardly of the cylinder, and a tension spring 60 is connected between the foot formation 58 and the support beam 35 to resiliently urge the piston inwardly of the cylinder. A hydraulic conduit fitting 61 is mounted on the cylinder cap or end 54 and communicates with the interior of the cylinder between the closed end of the latter and the adjacent end of the piston 57.

Handles 62 and 63 are mounted on the cylinders 43 and 53, respectively, at the outer sides of the cylinders for swinging the hydraulic jacks inwardly and outwardly relative to the adjacent sides of the loader frame.

A conduit 65 is connected at one end to the branched conduit 33 and is connected at its other end through a branch conduit 66 with both of the hydraulic conduit fittings 52 and 61. A manually operated valve 67 is connected into the conduit 33 between the connection of the conduit 65 with the conduit 33, and the hydraulic devices 16 and 17, and a manually operated valve 68 is connected into the conduit 65.

When the valve 67 is closed and the valve 68 is open, the main valve 26 is effective to control the application of hydraulic fluid under pressure from the pump 20 through the conduit 65 to the hydraulic jacks 41 and 42, and when the valve 68 is closed and the valve 67 open, the control valve is cut off from the jacks 41 and 42 and effective to control the application of hydraulic

fluid under pressure to the hydraulic devices 16 and 17.

With this arrangement, if the rear wheel truck 12 of the loader becomes derailed, the valve 67 is closed and the valve 68 opened, and the control valve 26 then operated to control the application of hydraulic fluid to the jacks 41 and 42 to raise the rear end of the loader frame and the rear wheel truck to bring the wheels of the rear wheel truck above the track 13 and position them back on the track. If necessary, either one of the jacks can be inclined outwardly from its connection with the corresponding end of the support beam 35 to provide a side push on the rear end of the loader to move the wheels sidewise relative to the track and realign them with the track before they are lowered back onto the track. The jacks can be operated one or more times, as may be necessary, to move the derailed rear wheel truck back onto the track rails.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

What is claimed is:

1. In a track loader, a frame having front and rear ends, a truck having front and rear track engaging wheels, said truck supportably engaging said frame at a point intermediate said ends of the frame, a supporting beam secured to and extending across said frame at the rear end of the frame, said beam having ends projecting laterally beyond opposite sides of said frame, a hydraulic jack depending from each end of said beam along a side of the frame, and comprising a cylinder secured to the beam, a piston working in the cylinder and having an exposed lower end depending from the cylinder and having a foot for engaging the ground, and hydraulic operating means on said frame and operatively connected to the jacks for depressing a piston into engagement with the ground for raising the rear end of the frame and the rear wheels of the truck, said jacks normally occupying perpendicular positions, pivot means securing said cylinders to said beam and providing for swinging movement of the jacks laterally outwardly from their normal positions on horizontal axes extending longitudinally of the frame to angulated positions to enable engagement of the jack feet with the ground at angles producing lateral shifting of the loader frame when a jack is operated.

2. A track loader according to claim 1 wherein each jack further comprises means acting between its piston and its cylinder for limiting depression of the piston relative to its cylinder.

3. A track loader according to claim 1 wherein each jack further comprises a return spring stretched between the beam and its piston and serving to elevate the piston in the cylinder from a depressed position and for urging the jack toward its normal position from an angulated position.

4. In a jack assembly for a track loader, a beam adapted to be secured across an end of the track loader, said beam having ends adapted to project beyond opposite sides of the loader, a hydraulic jack secured to and depending from each end of the beam and having a ground en-

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gaging foot, and means for operating a jack and depressing the foot thereof for raising the said end of the leader frame, and pivot means securing the jacks to the beam, said jacks normally occupying perpendicular positions along opposite sides of the loader frame, said pivot means being arranged to enable said jacks to be swung from their normal positions to laterally outwardly angulated positions with their feet displaced to engage the ground at points distant from the sides of the loader frame.

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