Nov. 7, 1950 T. ANDERSEN 2,529,208

BULLDOZER ATTACHMENT

Filed Feb. 20, 1946 4 Sheets-Sheet 1

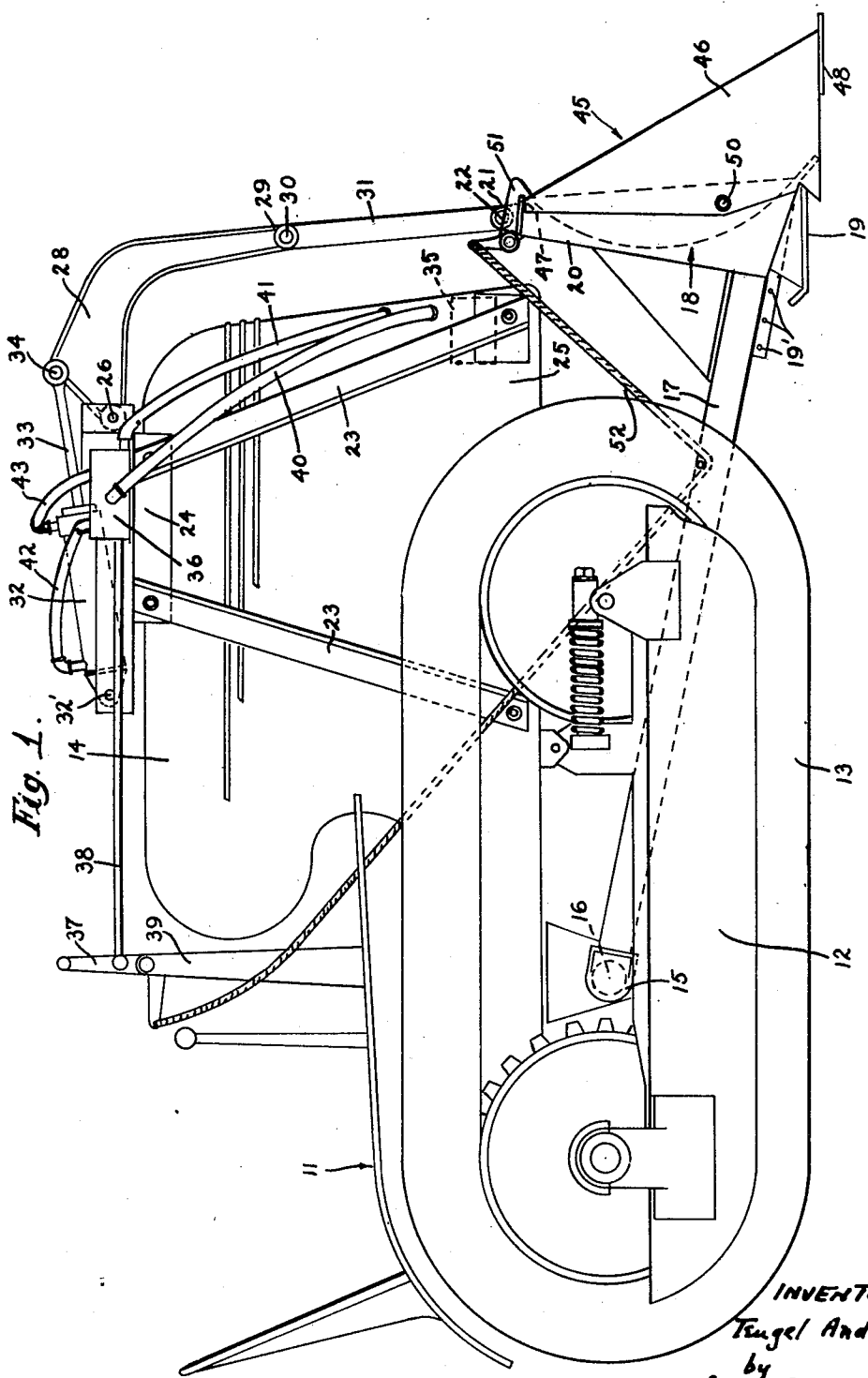


Fig. 1.

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BULLDOZER ATTACHMENT

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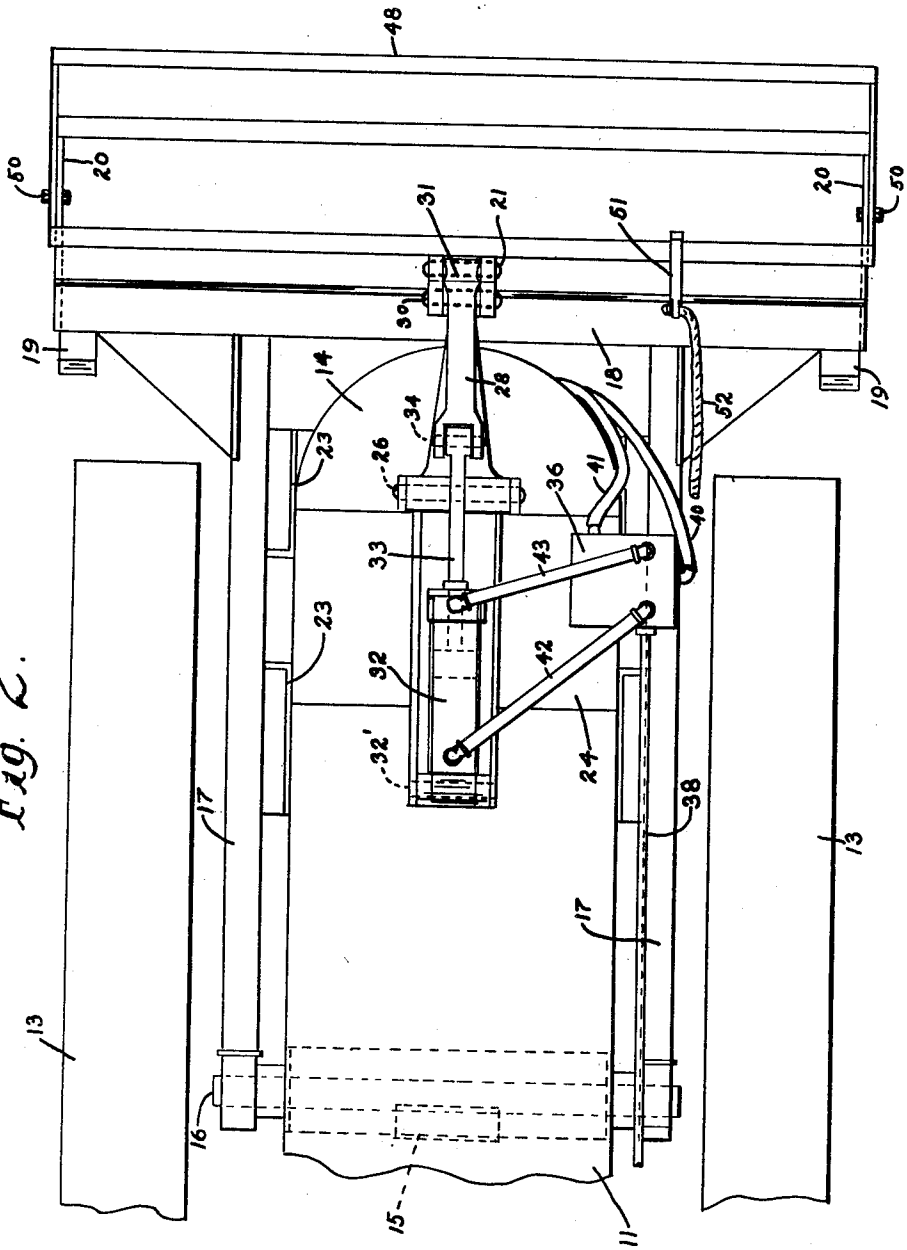


Fig. 2.

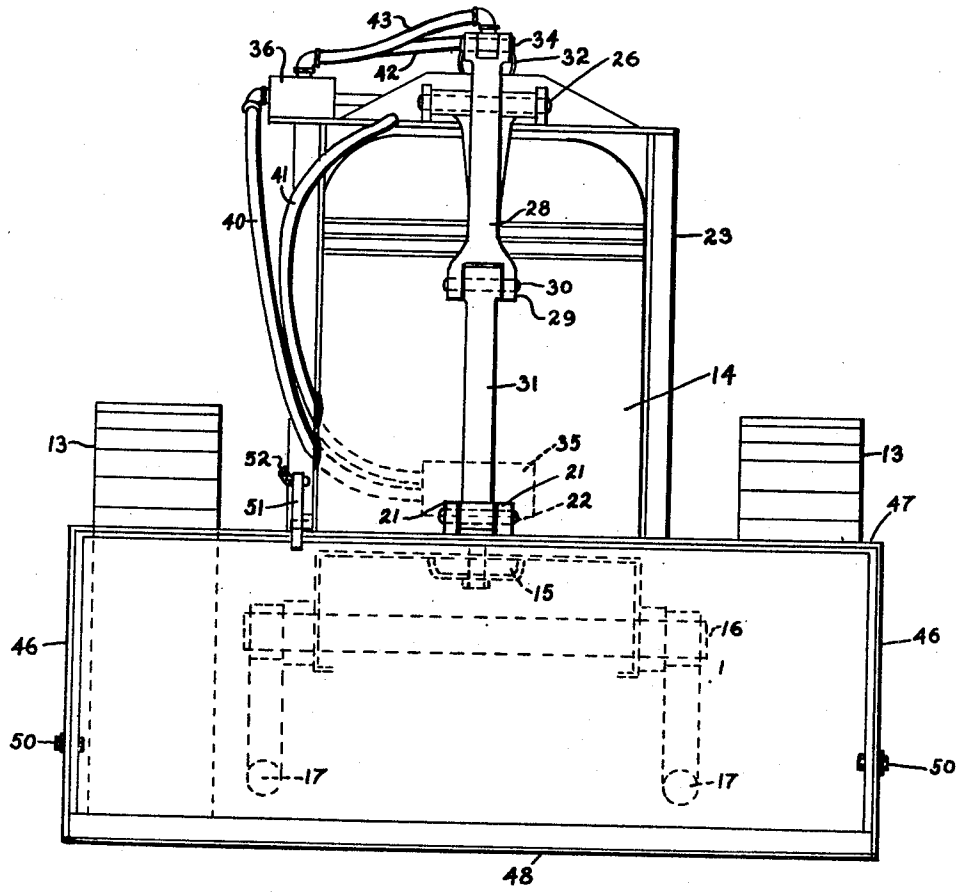
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BULLDOZER ATTACHMENT

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Fig. 3.



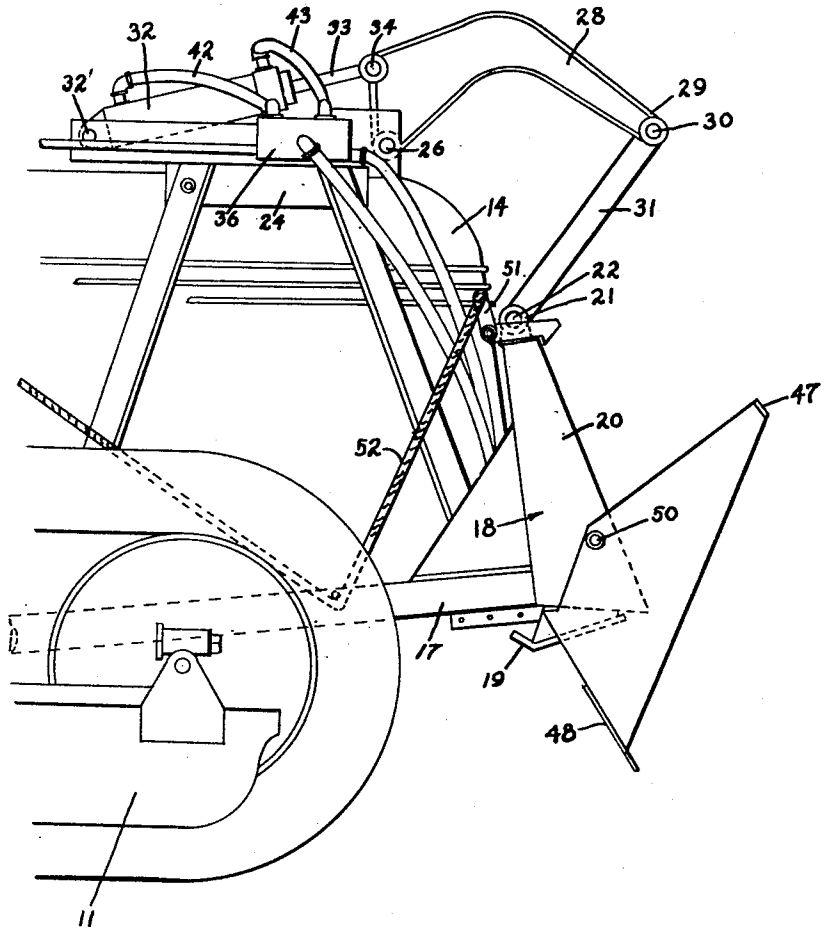
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BULLDOZER ATTACHMENT

Filed Feb. 20, 1946 4 Sheets-Sheet 4

Fig. 4.



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UNITED STATES PATENT OFFICE

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BULLDOZER ATTACHMENT

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Application February 20, 1946, Serial No. 648,875

2 Claims. (Cl. 214—140)

1

My present invention relates to apparatus for moving earth and the like, and particularly to an improved bulldozer and scoop attachment for the same.

Heretofore, where the bulldozer blade has been hydraulically controlled, the hydraulic unit has been so located on the tractor as either to obscure the vision of the operator or to be subject to dirt and grit from the tracks. This has been especially true where two hydraulic rams are provided, one at each side of the tractor, near the tracks.

In accordance with my present invention I provide a single hydraulic unit, consisting of a hydraulic ram, an oil reservoir and a valve for controlling the bulldozer blade, and I mount such unit on top of the engine hood of the tractor, preferably in the fore and aft line thereof, where it will neither obscure the operator's vision nor be subject to dirt and grit from the tracks.

My construction is characterized by the further features that in it the bulldozer arms are mounted inside of the tracks, which gives an unobstructed clearance as compared with the conventional outside of tracks mounting, and that said arms are directly connected to the drawbar connection, thereby eliminating any undue stress or strain on the track frames.

One outstanding advantage of my construction is that it enables me to mount the bulldozer blade in very close proximity to the front of the tractor, thereby materially shortening the overall length of the apparatus as well as eliminating the structural weaknesses which exist where the blade has to be mounted a substantial distance in advance of the tractor radiator.

In connection with such arrangement, and as an additional feature thereto, I provide a quick-detachable scoop for the bulldozer blade whereby a load may be scooped up and carried to any desired point and there dumped by simply tripping a latch. My scoop may be attached and detached from the blade in the minimum time and with the minimum effort. It is so balanced that it will dump itself without creating any severe shock and may be automatically relatched in position to repeat the scooping operation by simply dropping the blade and scoop down onto the ground.

Other objects and novel features of the construction and arrangement of parts comprising my improved apparatus, together with the advantages which result therefrom, will appear as the description of the invention progresses.

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In the accompanying drawings wherein I have illustrated a preferred embodiment of my invention:

Figure 1 is a side elevation of a tractor equipped with my novel bulldozer and scoop attachment, the blade and scoop being shown as latched in their lowered position.

Figure 2 is top plan view of the structure shown in Figure 1.

Figure 3 is front elevation thereof, and

Figure 4 is a partial side elevation showing the blade and scoop when in their raised position.

Referring to the drawings, I have designated generally at 11 a tractor of the crawler type having as essential elements track mountings 12, tracks 13, a power plant housed beneath the hood 14, a drawbar connection 15, and a tractor frame 25.

The drawbar connection 15 includes a cross shaft 16 to the ends of which is pivotally mounted the rear ends of a pair of forwardly extending bulldozer arms 17 located inside of the tracks. Secured to the front ends of the arms 17 is a bulldozer blade 18 provided with adjustable shoes 19 and side plates 20. Each shoe 19 is adjustably mounted on blade 18 by means of a removable fastening bolt or the like and a series of holes 19' so that it may be adjusted to compensate for wear. At the upper medial portion of the blade 18 is a pair of lugs 21 having a pivot shaft 22 mounted therein.

Rising from the frame 25, at each side of the hood 14, and extending upwardly from a point slightly above the top of the hood 14, are frame members 23. Secured to the upper ends of the members 23 is a platform 24, such platform being made preferably from a length of channel iron.

Adjacent the forward end of the platform 24 is a shaft 26 on which is pivotally mounted one end of an arcuate shaped link member 28. This arcuate shaped link member or bell crank 28 extends forwardly from its pivot point, and thence downwardly to a point 29, thus following generally the contour of the front portion of the hood 14. At the point 29 of the link member 28 is a transverse shaft 30 to which is connected the upper end of a connecting link 31. The lower end of said link is pivotally mounted on the shaft 22 at the upper end of the bulldozer blade 18.

Extending transversely of the platform 24 is a shaft 32' to which is pivotally attached the rear end of a double acting hydraulic ram 32. The piston rod 33 of said ram extends forwardly and is pivotally attached to the link member 29 by the

shaft 34. It will be noted that shaft 34 is spaced apart from the shaft 26 and, as the double acting ram 32 is pivotally mounted at 32' at its rear end, rearward movement of the piston rod 33 will cause a pivotal movement of the link 28 about the pivot shaft 26 through an angle of approximately 90° thus causing an upward movement of the bulldozer blade 18 (see Fig. 4).

On the frame 25 is located an oil pump 35 and on the platform 24 is located a valve 36. The valve 36 is controlled by means of a valve throttle 37 and connection 38, the valve throttle 37 being pivotally mounted at the upper end of a standard 39 secured to the frame 25 within easy reach of the operator. The oil pump 35 is connected to the valve 36 by the flexible hose 40 and 41, and the valve 36 is connected to the double acting hydraulic ram by the hose 42 and 43.

By directly connecting the rear ends of the bulldozer arms 17 to the drawbar connection 15 of the tractor and thus between the tracks and the power plant of the tractor, unobstructed clearance of the conventional outside of tracks mounting is accomplished. Further, the direct connection of the bulldozer arms with the drawbar connection 15 eliminates any undue stress or strain on the track frames.

The installation of the hydraulic ram, valve, and valve control means as a unit on or over the hood of the power plant of the tractor is advantageous because so located these parts do not obstruct the vision of the operator.

In connection with the structure shown, I prefer to provide a quick-detachable scoop 45 for the bulldozer blade 18. Accordingly I provide the side plates 20 of bulldozer blade 18 with a pair of aligned holes. The scoop 45, having spaced side or end walls 46, a top bar 47, and a bottom 48, also has in its side or end walls 46 holes in alignment with the holes in the side walls of bulldozer blade 18. Removable bolts 50 pass through the aligned holes in side plates 20, of blade 18 and scoop 45, respectively, and pivotally mount scoop 45 on the front of bulldozer blade 18.

The scoop is latched in position on the blade by a lever latch 51, which is pivoted on the upper end of bulldozer blade 18. Latch 51 engages top bar 47 of the scoop and holds such scoop in locked position. Attached to latch lever 51 is one end of a monkey line 52, the other end of such line being within easy reach of the operator.

Assuming that the bulldozer arms 17 have been lowered to bring the blade 18 into engagement with the ground, the contact of the scoop 45 with the ground will rotate the scoop about the bolts 50 relative to bulldozer blade 18 and will cause its top bar 47 to be engaged by the lever latch 51. The scoop 45 is now held in latched position and the apparatus is operated in the usual manner to load the scoop. When the scoop is loaded, the operator transports the same to the point of dumping, and after moving the scoop to the proper point, pulls the monkey line 52 to release the lever latch 51 from the top bar 47, whereupon the weight of the load will cause the scoop to rotate on the bolts 50 in reverse direction and thus dump the load (see Figure 4). When the blade is dropped to the ground again, the latching engagement is automatically restored.

To remove the scoop from the bulldozer it is only necessary to remove the two bolts 50. The lever latch 51 and monkey line 52 may be removed at the same time, or may be left in position, as their presence or absence does not affect the operation of the bulldozer.

From the foregoing description, taken in connection with the accompanying drawings, it is evident that I have provided a simple, inexpensive and effective construction for controlling the bulldozer blade, and the scoop attachment if such be used.

Although I have described my invention in connection with a tractor of the crawler type, it is to be understood that the principles are equally applicable to a wheeled tractor, and that the term "tractor" as used herein is inclusive of both such types of tractors.

Similarly, while I have disclosed a preferred embodiment of my invention, I recognize that the same may be modified in many respects to suit particular operating conditions without departing from the principles of my invention. Accordingly, all such changes are to be considered as within the purview of my invention if within the scope thereof as set forth in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent is:

1. In combination with a tractor, a pair of arms pivotally attached at their rear ends to the tractor and extending forwardly along the sides of the tractor, a blade carried at the forward ends of said arms and extending across the tractor in front of the same, said blade having side plates and a pair of alined bearings in said side plates, a scoop having a top cross-bar, a bottom and side plates, and a pair of alined bearings in said side plates registering with the bearings in the side plates of said blade, pivot members passing through said pairs of bearings for pivotally mounting the scoop on the blade, a latch pivoted to the blade adjacent the upper edge thereof and adapted to be engaged by the top cross bar of said scoop whenever the blade and scoop are dropped against the ground and the scoop thereby caused to rotate in a direction to engage said cross bar with said latch, and an operator-actuated cable for releasing said latch to permit the loaded scoop to rotate in reverse direction and dump its load.

2. The structure of claim 1 wherein the pivot members for the blade and scoop are located adjacent the rear edges of the side plates of the blade and scoop and at points below the horizontal center line of said plates.

TENGEL ANDERSEN.

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