

July 4, 1950

M. E. WOOD
EARTH MOVING APPARATUS

2,513,700

Filed July 12, 1946

4 Sheets-Sheet 1

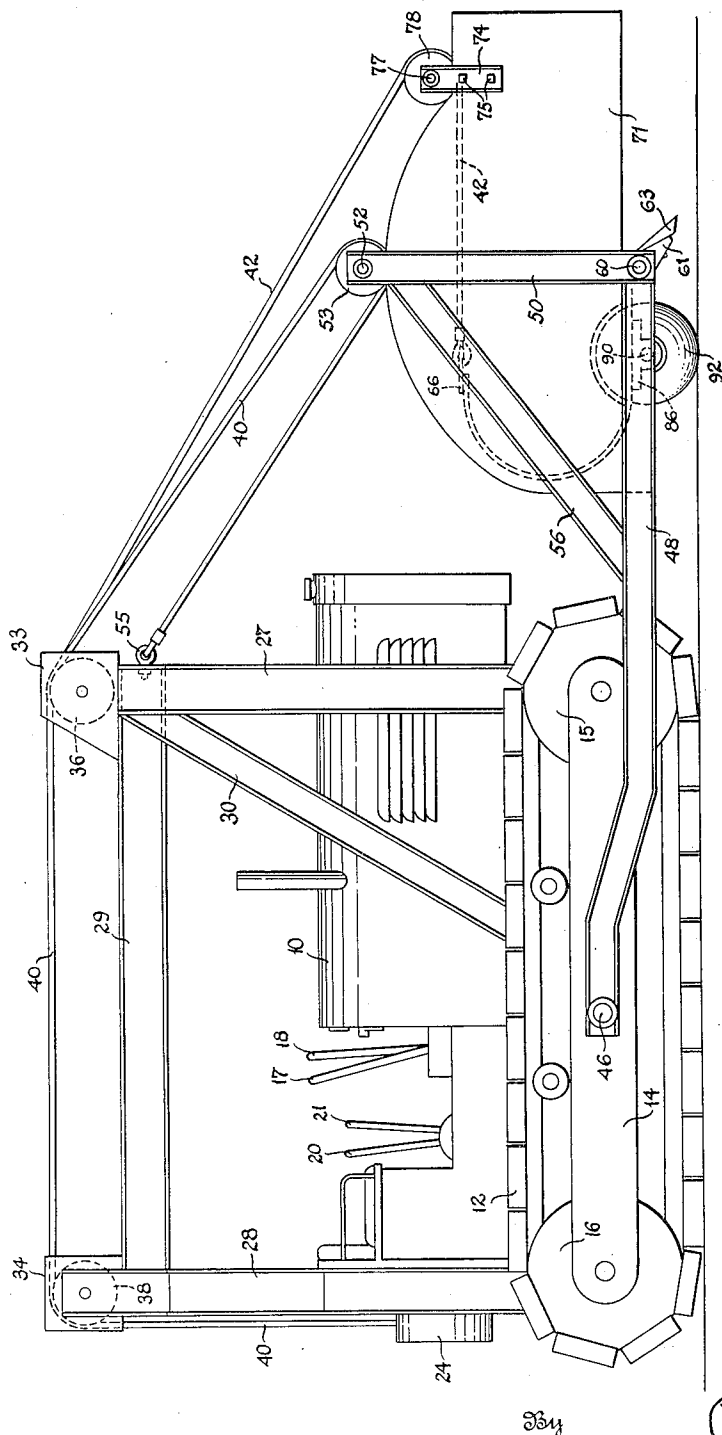


Fig-1

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4 Sheets-Sheet 2

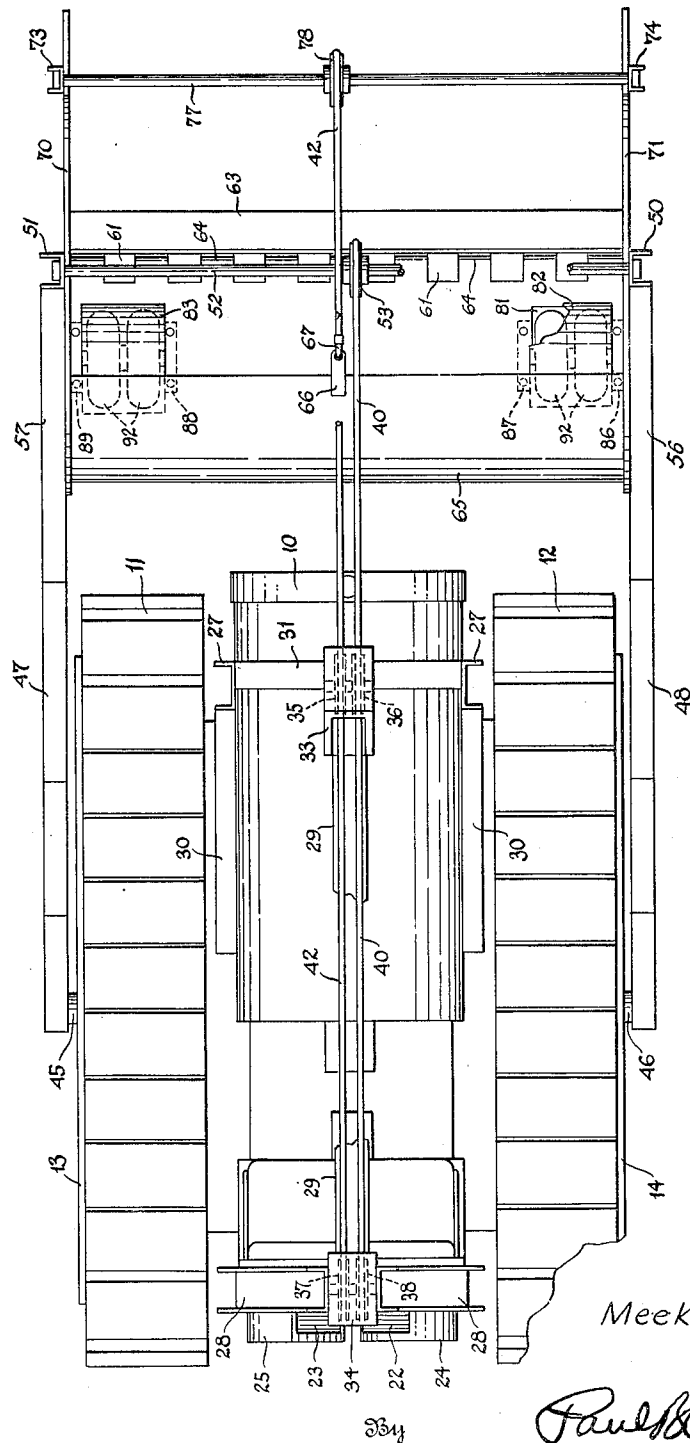


FIG. 2

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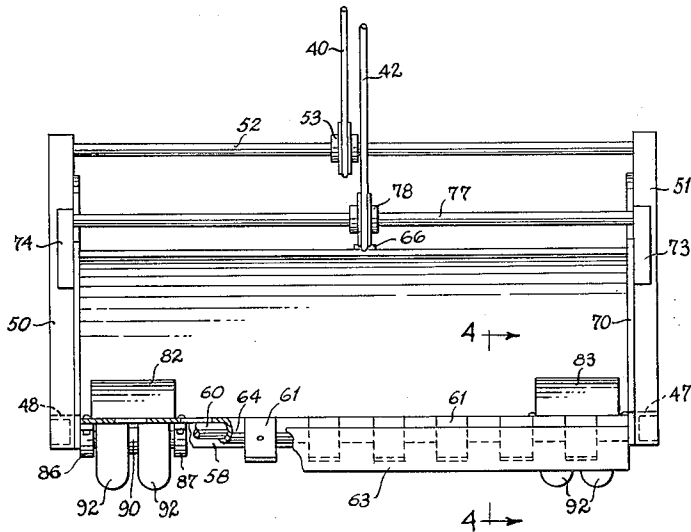


Fig- 3

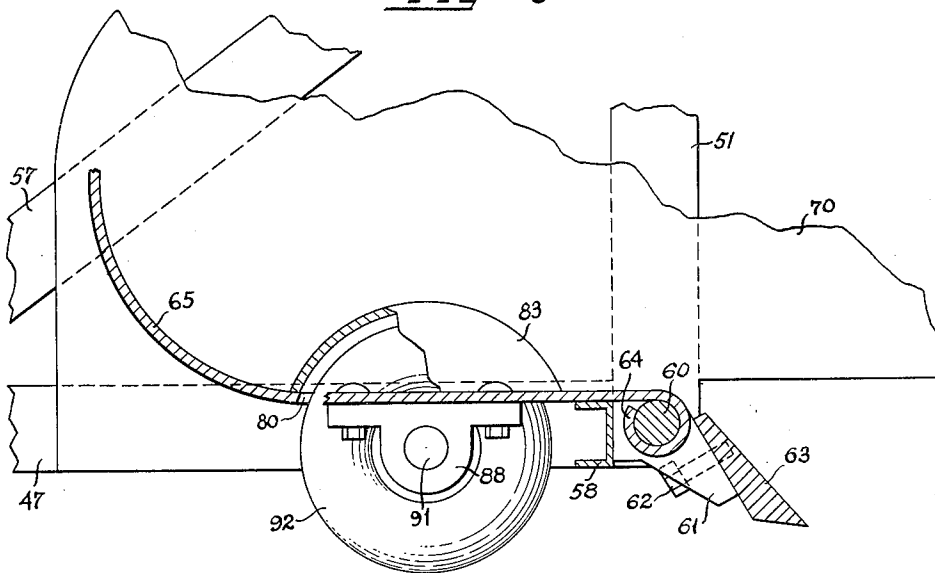


Fig- 4

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4 Sheets-Sheet 4

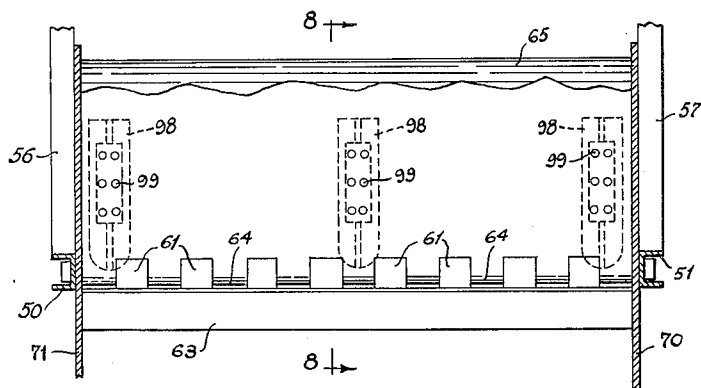


Fig-7

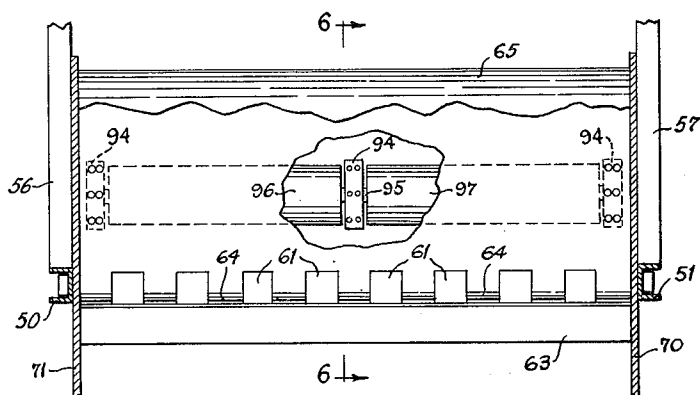


Fig-5

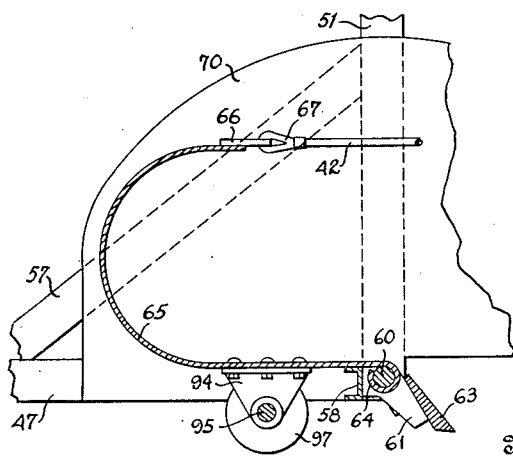


Fig-6

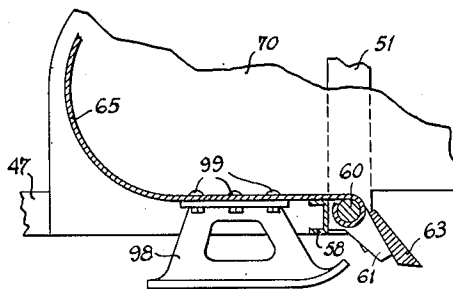


Fig-8

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UNITED STATES PATENT OFFICE

2,513,700

EARTH-MOVING APPARATUS

Meek Everitt Wood, Filbert, S. C.

Application July 12, 1946, Serial No. 683,040

5 Claims. (Cl. 37—124)

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This invention relates to an improved bulldozer for attaching to tractors, and more especially to a bulldozer which will not only scrape the earth, but will deposit it in a suitable pan carried by the bulldozer, and thus collect a large load of dirt, or other material, to be dumped at a selected point.

It is an object of this invention to provide a bulldozer attachment for tractors, which not only will carry a large load of dirt, or other material, but which load will not have a tendency to make the blade of the bulldozer dig deeper and deeper into the soil, or to cut to a lesser and lesser depth, due to the weight of the load.

It is another object of this invention to provide a bulldozer attachment for tractors, wherein the bulldozer blade has associated therewith, an earth carrying pan, and the bulldozer blade is fixedly secured to a pivoted frame projecting from the front end of the tractor, and the position of this pivoted frame can be regulated with relation to the ground, and the bulldozer blade and pan associated therewith carries supporting means, for supporting the pan and blade independently of the swinging frame, so that as dirt is deposited into the pan back of the blade, the weight of the dirt will not cause the blade to dig deeper and deeper into the soil, but this blade can be regulated as to depth of cut by other controllable means within reach of the driver.

It is another object of this invention to provide a bulldozer frame pivotally secured to a tractor and projecting forwardly thereof, with raising and lowering means driven by the tractor, for raising and lowering the front end of the frame, as desired, with relation to the ground, the end of said pivoted frame having fixedly mounted therein a bulldozer blade and an earth carrying pan associated therewith, and the pan being pivotally supported near the blade and suitably supported by rollers, wheels, skids, or the like, so that the weight of the earth, carried by the pan associated with the blade, will not have a tendency to change the position of the blade relative to the frame to cause it to cut deeper or shallower, when such is not desired. Means are also provided whereby the position of the blade can be controlled by the driver of the tractor, and when desired, the contents of the pan, associated with the blade, can be entirely dumped from the pan, all by means controlled by the driver of the tractor.

Some of the objects of the invention having been stated, other objects will appear as the de-

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scription proceeds, when taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of the invention attached to a conventional track laying tractor;

Figure 2 is a top plan view of Figure 1;

Figure 3 is a front elevation of the bulldozer attachment;

Figure 4 is a vertical sectional view taken substantially along the line 4—4 in Figure 3;

Figure 5 is a top plan view, with parts in section, of the front end of the bulldozer attachment, and showing a modified form of support for the pan;

Figure 6 is a vertical sectional view taken substantially along the line 6—6 in Figure 5;

Figure 7 is a top plan view, with parts in section, of the front end of the bulldozer attachment, and showing another means of support for the pan;

Figure 8 is a sectional view taken substantially along the line 8—8 in Figure 7.

Referring more specifically to the drawings, the numeral 10 indicates a conventional track laying tractor, having endless tracks 11 and 12 and side plates 13 and 14 disposed on the exterior of said endless tracks. The endless tracks are mounted on driving wheels, such as 15 and 16, disposed on each side of and at each end of the tractor. This conventional tractor has shift levers 17 and 18, one for controlling the movement of one endless track, and the other for controlling the movement of the other endless track, whereby the tractor can be directed in its course. This tractor also has levers 20 and 21 for imparting rotation to suitable drums 22 and 23, disposed in housings 24 and 25 respectively.

This conventional bulldozer tractor has secured on either side at its forward end vertical channel members 27 and mounted at the rearward end upwardly and inwardly extended members 28. Connected to the top ends of channel members 27 is a channel member 31 to which an I-beam 29 is secured which extends rearwardly and is secured to members 28. Suitable channel struts 30 are also provided for bracing the superstructure comprising members 27, 28, and 29. On top of the superstructure, there is mounted a pair of fittings 33 and 34, in which pulleys 35, 36, 37, and 38 are rotatably mounted.

The drum 22 has wound therearound a suitable cable 40, which passes upwardly over pulley 38, and over pulley 36, to the front of the tractor. Drum 23 has wound thereon a conventional cable

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42, which passes over pulleys 37 and 35 to the front of the tractor.

The members 13 and 14 have mounted therein suitable pins 45 and 46, on which are pivotally mounted side channel members 47 and 48. These members 47 and 48 have rising upward from the front ends thereof vertical channel members 50 and 51, and spanning the distance between the upper ends of channel members 50 and 51 is a shaft 52, on which a pulley 53 is rotatably mounted, and over which cable 40 passes and is reversely directed, and is anchored to a suitable eye-bolt 55 secured to the channel member 31.

Secured to the channel members 47 and 48 are channel members 56 and 57, which act as a brace to the channel members 50 and 51. Spanning the distance between, and secured to the front inner edges of channels 47 and 48 is a channel member 58, which completes the framework pivotally secured onto the tractor.

Secured between the outer ends of channel bars 47 and 48 is an elongated bolt 60, which penetrates a plurality of prongs 61, which project rearwardly and are welded with their rear ends to the front portion of the channel bar 58, and to these prongs 61 is secured by means of suitable screws 62 a transverse cutting blade 63. In the interstices between the members 61 prongs 64 of a catch and dump pan 65 are curled around the bolt or shaft 60. The members 61 and blade 63 therefore are an integral part of the framework comprising side bars 47 and 48 and uprights 50 and 51. The catch and drag pan 65 projects upwardly and rearwardly and then forwardly and has a fitting 66 to which an eye-member 67 is secured, which eye-member is attached to the end of cable 42. Welded to the proximate surfaces of the uprights 50 and 51 and to the proximate surfaces of braces 56 and 57 and to the proximate surfaces of side channels 47 and 48 are plates 70 and 71, with which the ends of the catch and drag pan 65 have sliding contact. Secured to the front upper portions of these side-plates 70 and 71 are fittings 73 and 74, as by means of bolts 75. Mounted in the short channel members 73 and 74 is a transverse elongated bolt or shaft 77 on which is rotatably mounted a pulley 78 over which the cable 42 passes on its way to its connection with the upper front edge of the catch and dump pan 65.

The lower portion of the catch and dump pan 65 has a pair of openings 80 and 81, which are covered by suitable curved concavo-convex plates 82 and 83. Secured on the lower surface of the pan 65 are bearing members 86, 87, 88, and 89 in which shafts 90 and 91 respectively are mounted, on which wheels 92 are mounted for supporting the drag pan in association with bolt or shaft 60.

If desired, instead of the individual wheels 92, there may be a plurality of bearings 84 having a shaft 95 passing therethrough, on which rollers 96 and 97 may be mounted for supporting the pan in lieu of the wheels 92. Or if desired, suitable skids 98 may be suitably bolted, as at 99, to the lower surface of the pan 65 for supporting the same in conjunction with rod 60.

Method of operation

When it is desired to fill the catch and drag pan 65 the cable 42 is taken up by the winch drum 23, to move the wheels 92 upwardly slightly in relation to the side channel members 47 and 48 to thus permit the side channel members 47 and 48 to be lowered sufficiently so that the lower

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edge of the blade 63 may be raised or lowered to any desired elevation to properly engage the material to be moved. Now, in order to raise or lower the blade 63 disposed at the free ends of the side channel members 47 and 48, it is necessary to take up or let off, as the case may be, on the cable 40 by rotating the winch drum 22 in the desired direction. It is obvious in Figure 1 that to let off on the cable 40 when cable 42 is slack would permit the blade 63 with associated parts to move downwardly by gravity inasmuch as the wheels 92 would not be supporting the shaft 60 and the side channel members 47 and 48 are pivoted at 45 and 46. Conversely, by taking up on the cable 40, the blade 63 would be raised, and by letting off on the cable 42, the wheels 92 may be moved downwardly by gravity while the blade 63 moves upwardly. The weight of the material being moved holds the wheels 92 on the ground when the cable 42 is let off. The blade 63 is not only urged downwardly by the weight of associated parts, but also by resistance of the material which it is adapted to move.

In the drawings and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. A bulldozer attachment for tractors comprising a pair of side members having their rear ends pivotally secured to the tractor, a blade secured between the front ends of the side members, a rearwardly, upwardly and forwardly projecting pan having its lower front portion pivotally secured to the blade, means secured to the lower surface of the pan and disposed rearwardly of the blade for supporting the pan from the ground, means mounted on the tractor and extending to and connected to the front ends of the side members for raising and lowering the side members, other means mounted on the tractor, and secured to the upper forward portion of the pan for moving the pan on its pivot to dump the contents of the pan as desired.

2. In a tractor having a superstructure on which a plurality of pulleys are mounted, power driven means comprising drums around each of which a cable is wound, said cables extending forwardly over the superstructure and being mounted on said pulleys, a pair of side members having their rear ends pivotally secured on each side of the tractor and projecting forwardly of the tractor, a scraping blade secured to and spanning the distance between the front ends of the side members, a rearwardly then upwardly, then forwardly projecting pan pivotally secured to the rear portion of the blade, means for connecting one of the cables to the front end of the side members for raising and lowering the same, and means for connecting the front end of the other cable to the pan for pivoting the pan on its pivot to dump the contents of the pan as desired, supporting means secured to the lower surface of the pan rearwardly of its pivot for supporting the pan from the ground.

3. A bulldozer attachment for a tractor, said tractor having a superstructure on which a plurality of pulleys are mounted, and said tractor having a pair of power driven drums, each having a cable attached thereto, said cables extending up over the superstructure and forwardly of the tractor and supported by said pulleys, a pair of

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side members having their rear ends pivotally secured to the sides of the tractor and projecting forwardly of the tractor, a cross piece secured to the front ends of the side members and spanning the distance therebetween, uprights secured to the front ends of the side members and having a member secured to and extending between their upper ends, a pulley mounted on said last-named member, a scraping blade mounted between the front ends of the side members and spanning the distance therebetween, a dirt receiving pan pivotally secured to the member extending between the front ends of the side members and extending rearwardly, upwardly and forwardly, ground-engaging supporting means secured to the lower surface of the pan rearwardly of its pivot point, a pair of side plates secured to the uprights extending upwardly from the front ends of the side members, a shaft secured to the front upper ends of the side plates and spanning the distance therebetween; a pulley mounted on said shaft, the cable from one of the drums extending over the first mentioned pulley and having its front end anchored to the superstructure, the other cable extending over the last-named pulley and having its front end secured to the upper forwardly projecting portion of the pan.

4. A bulldozer attachment for a tractor, said tractor having a superstructure on which a plurality of pulleys are mounted, and said tractor having a pair of power driven drums, each having a cable attached thereto, said cables extending up over the superstructure and forwardly of the tractor and supported by said pulleys, a pair of side members having their rear ends pivotally secured to the sides of the tractor and projecting forwardly of the tractor, a cross piece secured to the front ends of the side members and spanning the distance therebetween, uprights secured to the front ends of the side members and having a member secured to and extending between their upper ends, a pulley mounted on said last-named member, a scraping blade mounted between the front ends of the side member and spanning the distance therebetween, a dirt receiving pan pivotally secured to the member extending between the front ends of the side members and extending rearwardly, upwardly and forwardly,

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wardly, ground-engaging supporting means secured to the lower surface of the pan rearwardly of its pivot point, a pair of side plates secured to the uprights extending upwardly from the front ends of the side members, a shaft secured to the front upper ends of the side plates and spanning the distance therebetween; a pulley mounted on said shaft, the cable from one of the drums extending over the first mentioned pulley and having its front end anchored to the superstructure, the other cable extending over the last-named pulley and having its front end secured to the upper forwardly projecting portion of the pan, the lower surface of the pan having ground-engaging supporting means independent of the superstructure secured thereto, said supporting means being disposed rearwardly of the pivot point of the pan.

5. A bulldozer attachment for tractors comprising a framework extending forwardly of the tractor and having its rear end pivotally connected to the tractor, a scraping blade mounted on the front end of the framework, an earth receiving pan pivotally secured to the upper rear portion of the blade and extending rearwardly and upwardly, ground-engaging supporting means carried by the pan, a vertically disposed plate secured on the framework at each side of the pan, means driven by the tractor for raising the front end of the framework, other means driven by the tractor for pivoting the pan forwardly to dump the contents therefrom, the lower surface of the pan having supporting means secured thereto, said supporting means being disposed rearwardly of the pivot point of the pan.

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