

United States Patent

Kant

[15] 3,657,831

[45] Apr. 25, 1972

[54] OFFSETTING CABLE PLOW

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[73] Assignee: American Tractor Equipment Corporation
[22] Filed: May 11, 1970
[21] Appl. No.: 36,085

[52] U.S. Cl. 37/193, 172/254, 172/484,
172/667, 172/677, 214/138
[51] Int. Cl. E02f 5/18
[58] Field of Search 172/667, 254, 484, 742, 677;
37/193; 214/138

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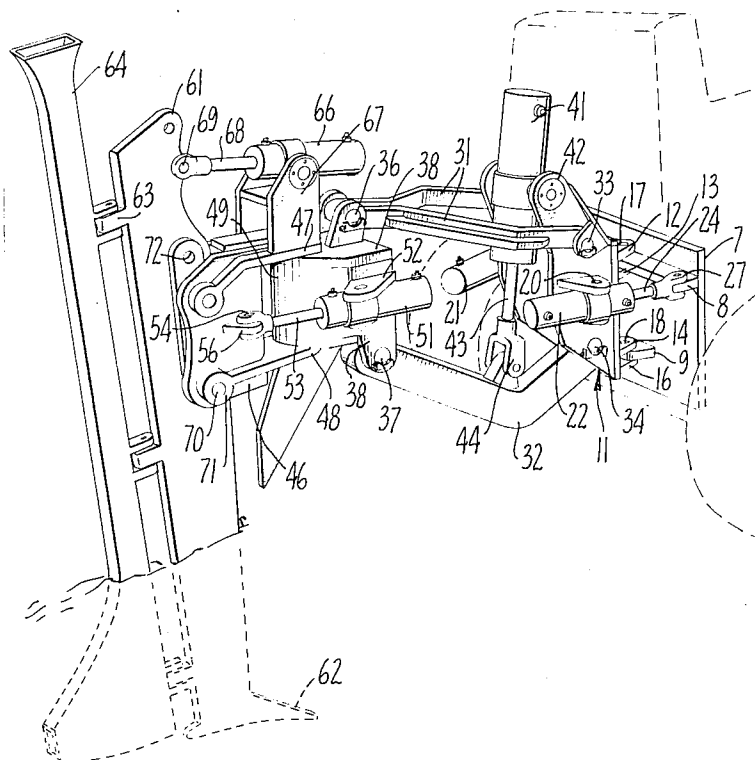
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[57] ABSTRACT

A cable plow is provided which is mounted at the rear of a suitable dirigible vehicle such as a crawler-type tractor. The cable plow is supported on a mounting plate at the rear of the vehicle for movement transversely of the vehicle by means of a vertical pin which is supported immediately adjacent to the mounting plate on the vehicle. By using such a mounting, one secures a reduction in the overall overhang of the plow from the vehicle by as much as 2 or 3 feet.

7 Claims, 3 Drawing Figures



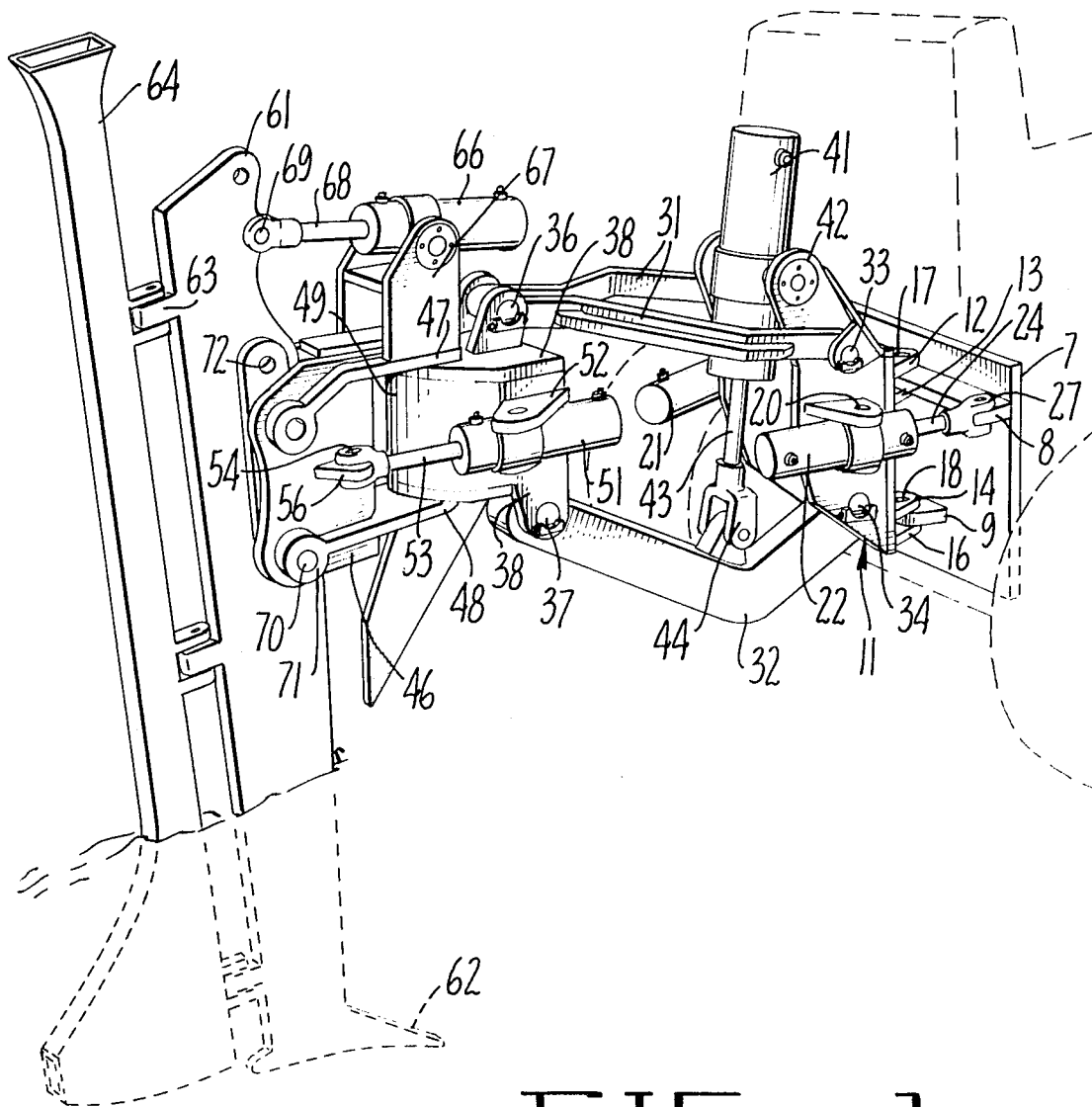


FIG. 1.

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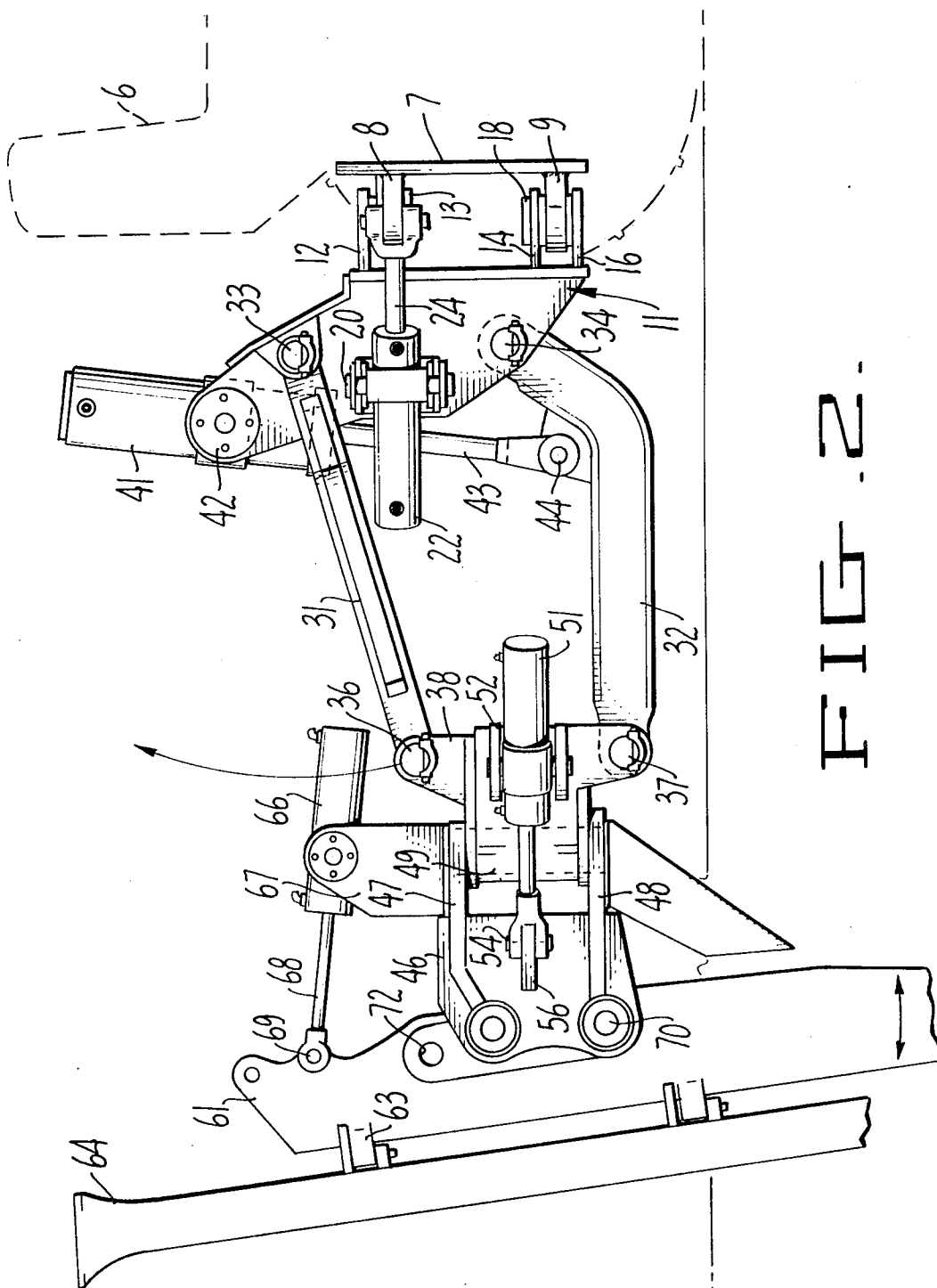


FIG. 2

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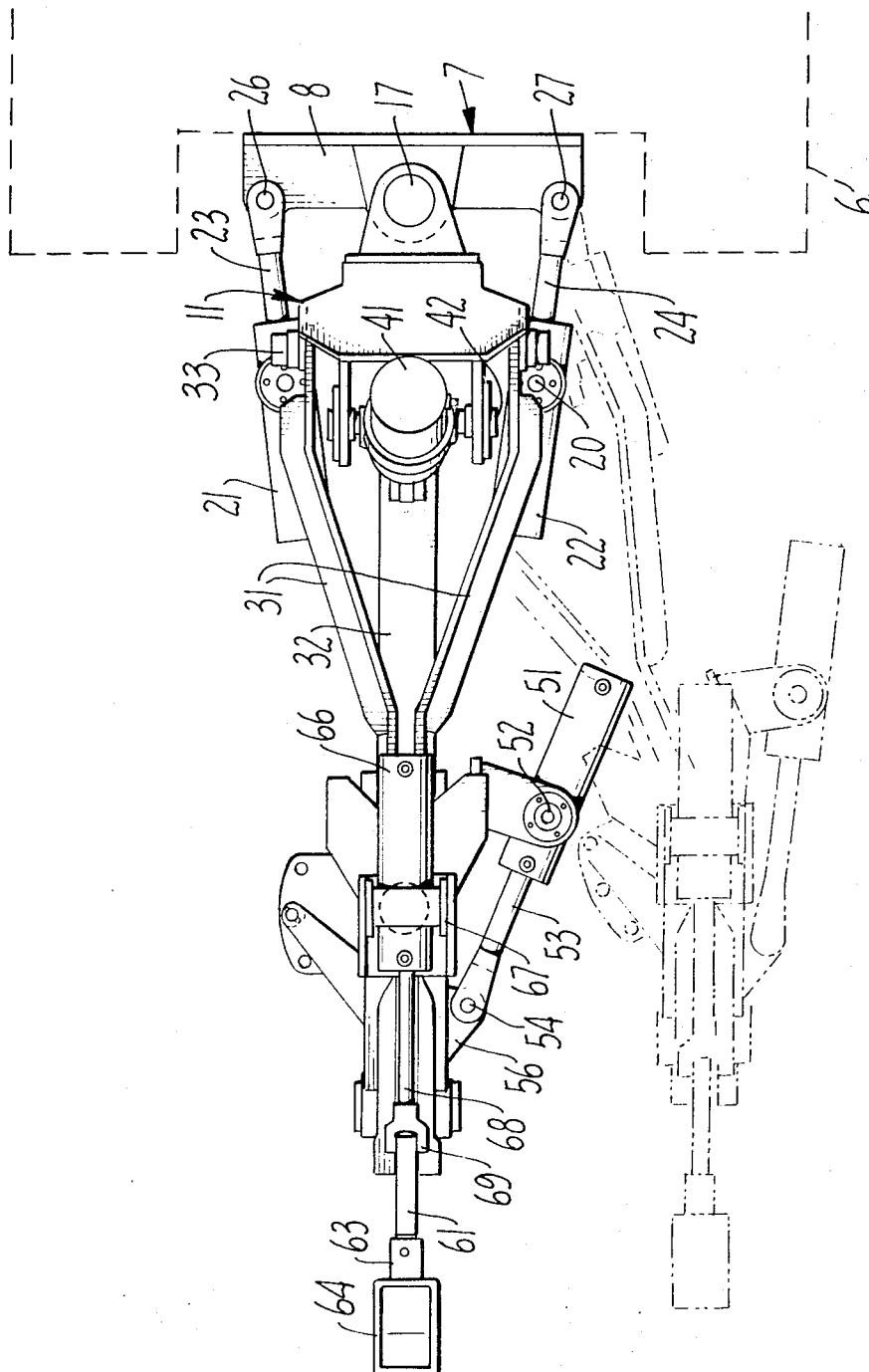


FIG. 3

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OFFSETTING CABLE PLOW

BACKGROUND OF THE INVENTION

In cable plows heretofore, means for raising and lowering a tool beam had been provided at the rear of the vehicle to support the plow support. The support included a vertical pin on the tool beam to permit the plow to be offset to either side of the vehicle. The result was a structure which extended rearwardly from the vehicle for a substantial distance with a long overhang. As a result, the entire assembly was not compact and the share of the plow was too far in the rear of the vehicle for maximum strength and efficiency. By providing the vertical pivot pin immediately adjacent to the rear of the vehicle, the extent of the overhang is substantially reduced, the plow structure is compact and its strength is necessarily increased.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a cable plow structure in which a vertical support permitting lateral movement of the plow with respect to the transporting vehicle is provided immediately adjacent the rear of the vehicle and the overall overhang of the structure supporting the plow is materially shortened.

The invention includes other objects and features of advantage, some of which, together with the foregoing, will appear hereinafter when the preferred embodiment of this invention is disclosed.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the rear of the vehicle showing the cable plow of this invention in position.

FIG. 2 is a side elevation of the cable plow structure of this invention.

FIG. 3 is a plan view of the cable plow embodying this invention, the solid lines showing the plow structure in actual alignment with the major axis of the vehicle while the view in phantom lines shows the plow offset with respect to such axis.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings, a dirigible vehicle, such as a track-laying type tractor, is generally indicated at 6. At the rear of the tractor, a mounting plate 7 is provided. Upper and lower horizontally extending brackets 8 and 9 are secured to the mounting plate 7. A cylinder support bracket, generally indicated at 11, is supported on the brackets 8 and 9 for transverse movement of the vehicle by upper and lower pairs of spaced ears, numerals 12 and 13 indicating the upper pair of ears and numerals 14 and 16 indicating the lower pair of ears, the pairs of ears being respectively secured to the brackets by pins 17 and 18. The cylinder support bracket 11 is movable transversely of the vehicle 6 by hydraulic cylinder and piston devices 21 and 22 pivoted at 20 on either side of the cylinder support bracket 11. The piston rods from each cylinder and piston structure 21 and 22 are indicated at 23 and 24. These are attached by pins 26 and 27 to the upper brackets 8. A pair of arms 31 are welded into a V-shaped unitary structure. This structure is hinged by pins 33 on the cylinder support bracket 11 while a lower arm 32 is hinged by pin 34 on the cylinder support bracket. The arms extend rearwardly and are secured by pins 36 and 37 to a frame 38. The arms provide a parallelogram structure, the vertical position of which is controlled by a cylinder 41 mounted between opposite sides of the cylinder support bracket 11 by bearings 42. A piston rod 43 extends from the cylinder 41 and is attached as at 44 to arm 32, thus permitting the vertical relation of the parallelogram provided by the arms 31 and 32 with respect to the ground to be altered at will by means of fluid application to the cylinder 41 and its contained piston (not shown).

Extending rearwardly from the frame 38 is a U-shaped plow share holder 46 having opposite ears 47 and 48 extending on either side of the frame 38 and supported thereon by a vertical pin 49. The plow share holder 46 is moved angularly with

respect to the frame 38 by a cylinder and piston structure, generally indicated at 51, which is mounted upon bracket 52 on one side of the frame 38. The piston rod 53 from cylinder and piston 51 is attached to the plow share holder 46 by pin 54 being fitted in an ear 56 provided on the side of the plow share holder 46.

The cable plow share is generally indicated at 61 and includes a sharp forwardly extending hardened cutting point 62. Hinged on the rear edge of the cable plow share by bracket support 63 is the cable feed tube 64 which is constructed and operates in a well-known manner.

The relation of the plow to the supporting structure in the device shown is controlled by the cylinder piston structure, generally indicated at 66, the cylinder being mounted in opposite brackets 67 provided upon the top of the plow share holder 46. The piston rod 68 which extends from the piston cylinder structure 66 is secured as at 69 to the cable plow share 61, this being supported by a pin 70 passed through a lower bracket portion 71 on the plow share holder 46.

If desired, the cylinder and piston structure 66 can be omitted and the angular relation of the plow to the plow share holder 46 can be established by passing a pin through a selected one of a series of apertures 72 provided in the plow. Thus, by placing the supporting pins 70 in any pair of selected apertures 72, the angular relation of the cable plow with respect to the vertical may be suitably adjusted.

From the foregoing, it will be apparent that I have provided an improved cable laying plow structure in which the overall length of the structure and its supporting elements is materially foreshortened with the result that a simple compact structure is provided. In addition the plow is subject to precise control by means of the four different sets of cylinder and piston structures which are provided, namely, those indicated at 22, 41, 51 and 66.

I claim:

1. A plow comprising:

- a vertically disposed, transversely extending mounting plate secured directly to the rear end of a tractor type vehicle;
- a pair of vertically spaced, horizontally extending brackets on said mounting plate;
- a vertically disposed, rearwardly extending cylinder support bracket pivotally mounted to said mounting plate about vertical pivot pins extending through said vertically spaced brackets for side-to-side pivotal movement of said cylinder support bracket relative to said mounting plate;
- a pair of vertically spaced arms pivotally mounted at one end to said cylinder support bracket for vertical pivotal movement with respect thereto;
- first means pivotally mounted to the other end of said arms for supporting a plow share on said arms;
- a plow share supported on said first means; and
- hydraulically operated means operatively connected between said mounting plate and said cylinder support bracket, between at least one of said arms and said cylinder support bracket, and between said first means and said plow share for positioning said cylinder support bracket, said arms and said plow share.

2. A plow as in claim 1, wherein the other ends of said arms are pivotally mounted to the top and bottom, respectively, of a frame for vertical pivotal movement relative to said frame, said arms, said cylinder support bracket and said frame comprising a parallelogram linkage.

3. A plow as in claim 2, wherein a generally U-shaped plow share holder is pivotally mounted to the frame about a vertical pivot means for side-to-side pivotal movement of said plow share holder relative to said frame, said plow share being supported on said plow share holder.

4. A plow as in claim 3, wherein a piston and cylinder assembly is connected between said mounting plate and each side of said cylinder support bracket for effecting side-to-side pivotal movement of said cylinder support bracket relative to said mounting plate.

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5. A plow as in claim 4, wherein a piston and cylinder assembly is connected between said cylinder support bracket and the lower arm of said pair of arms for effecting vertical pivotal movement of said arms.
6. A plow as in claim 5, wherein a piston and cylinder assembly is connected to one side of said frame and to said U-shaped plow share holder to effect side-to-side pivotal move-

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ment of said plow share holder relative to said frame.
7. A plow as in claim 6, wherein a piston and cylinder assembly is connected between said plow share holder and said plow share to effect pivotal movement of said plow share relative to said plow share holder.
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