

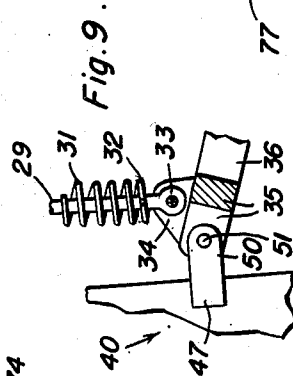
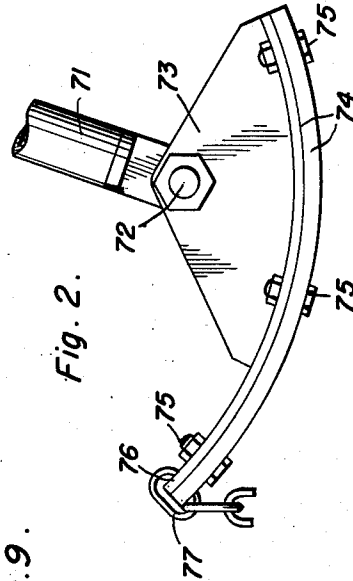
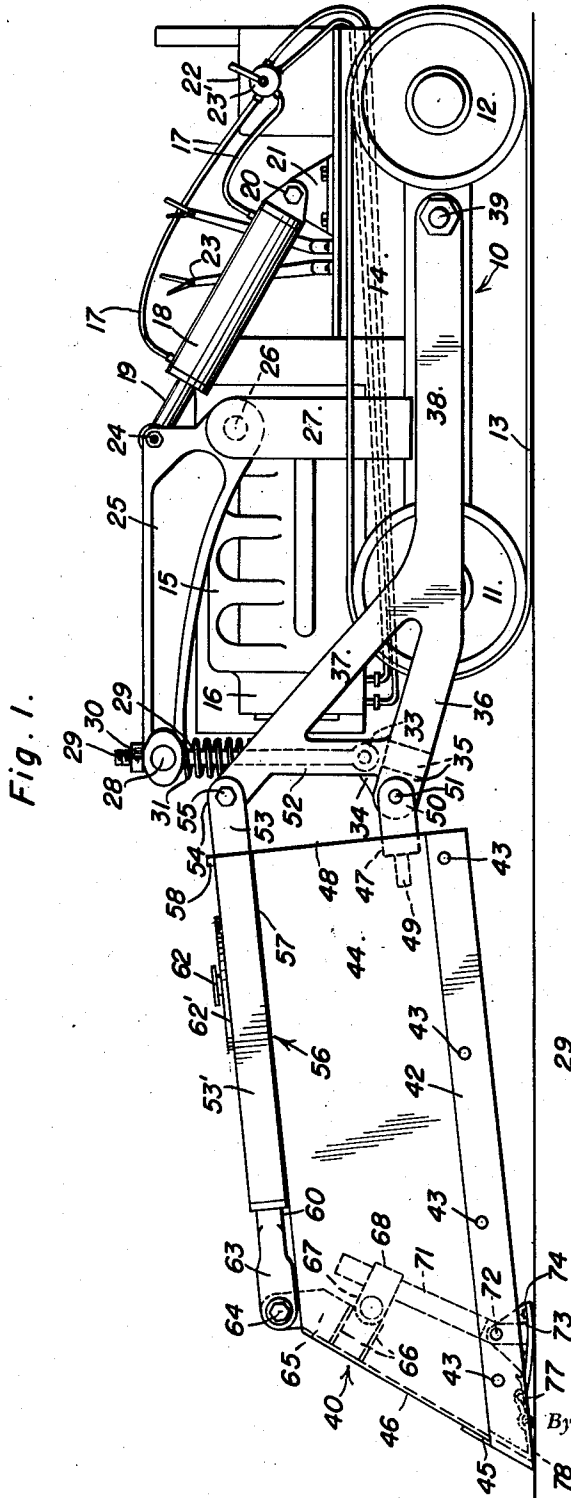
Aug. 14, 1951

M. E. SEEGER
TRACTOR DITCH DIGGER

2,564,034

Filed Jan. 2, 1948

3 Sheets-Sheet 1



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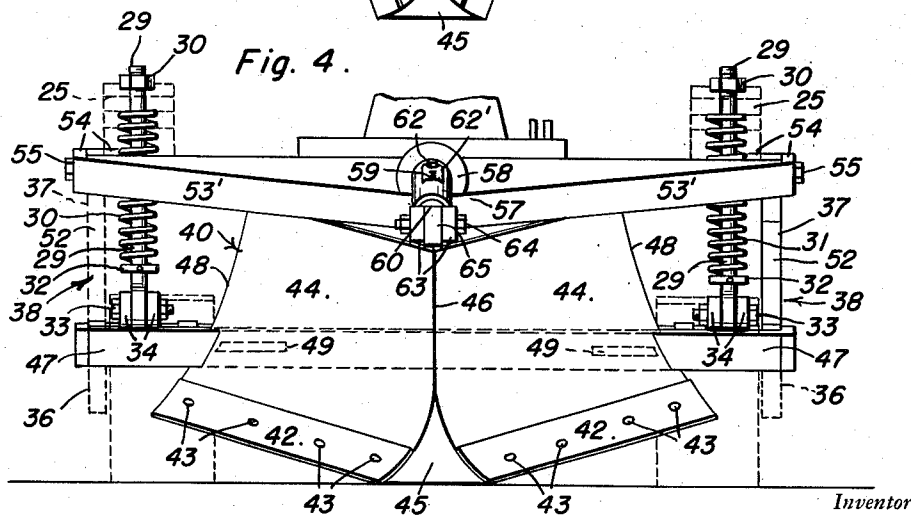
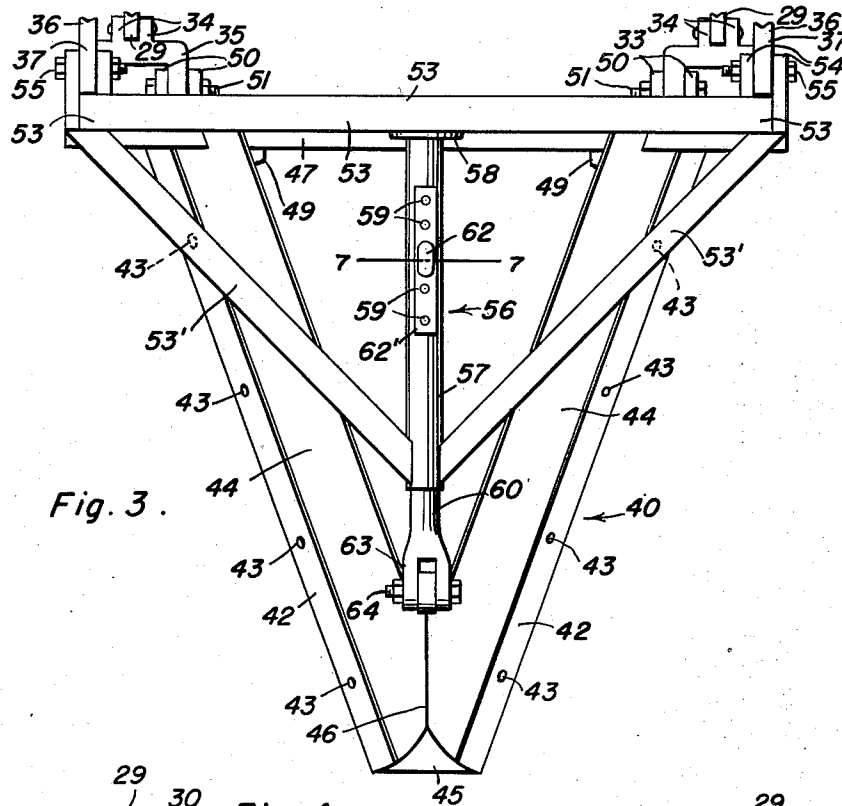
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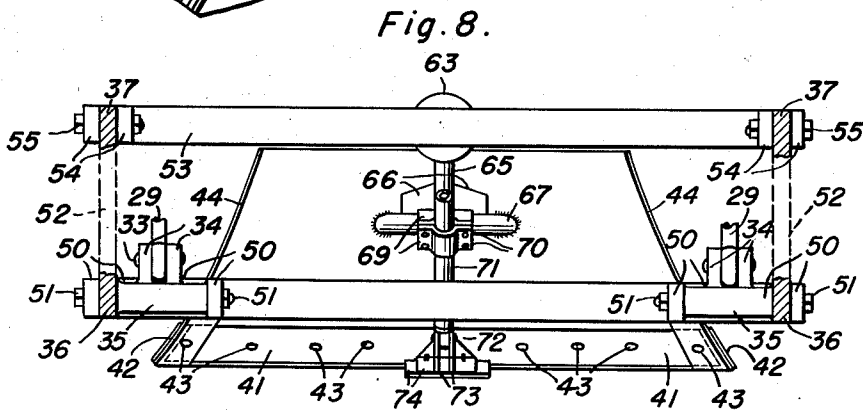
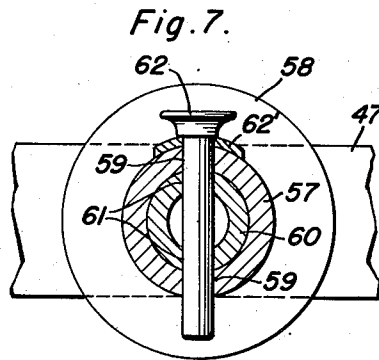
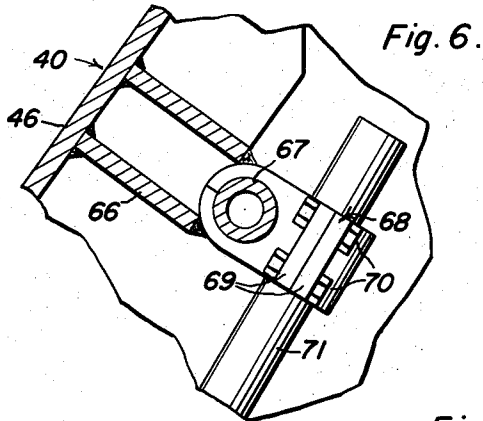
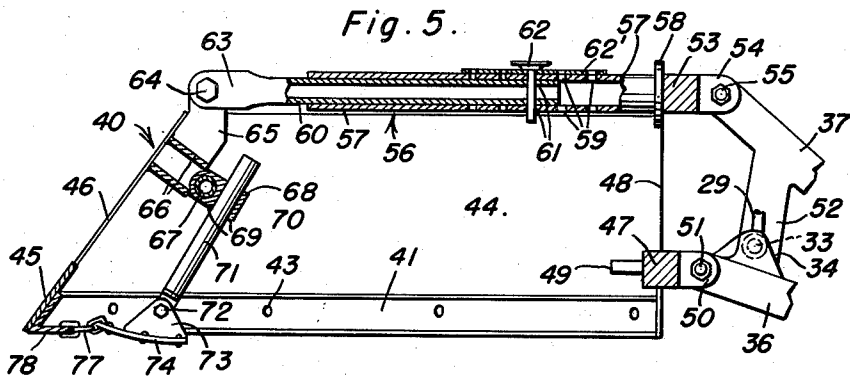
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UNITED STATES PATENT OFFICE

2,564,034

TRACTOR DITCHDIGGER

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Application January 2, 1948, Serial No. 1

1 Claim. (Cl. 37—98)

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This invention relates to a ditch digger and more particularly to a tractor ditch digger.

An object of the invention is to provide a ditch digger embodying rearwardly diverging blades associated with moldboards and having a snub point to produce a ditch of the proper width at the bottom and with sloping sides, the device being designed to be fastened to the arms to which the usual bulldozer blade is fastened, after the removal of the bulldozer blade, and being capable of adjustment to vary the forward inclination or pitch of the blades and the depth of the ditch.

Another object of the invention is to provide a digger adapted for connection to an hydraulically operated raising and lowering means on a tractor and means to cushion the action of the digger when the latter strikes obstructions such as rocks and roots.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevation of a tractor ditch digger constructed in accordance with the invention and applied to a tractor.

Figure 2 is a side elevation of a shoe for determining the depth of the ditch and for levelling the bottom of the ditch to the proper width.

Figure 3 is a top plan view of the ditch digger detached from the tractor.

Figure 4 is a front elevation of the device.

Figure 5 is a central vertical longitudinal sectional view partly in elevation.

Figure 6 is a detailed sectional elevation showing the manner of adjusting the depth control and levelling shoe within the front of the digger.

Figure 7 is an enlarged transverse sectional view showing the telescopic adjustment link and pin for adjusting the pitch of the blade taken substantially on the line 7—7 of Figure 3.

Figure 8 is a rear elevation of the device as shown in Figures 3 and 4, and

Figure 9 is a detailed sectional elevation showing the connection of the cushioning means to the tractor frame.

Referring to the drawings in detail, 10 designates a tractor shown provided with the propelling wheels 11 and 12 bearing an endless tread 13 at each side having a suitable tractive surface. The frame of the tractor is indicated at 14 running horizontally at the front of which is provided the usual hood 15 in which the motor is mounted associated with an extension 16 con-

taining an hydraulic pump for supplying power through hose 17 to cylinders 18 to operate the working pistons therein connected to the piston rods 19. The cylinders are shown pivoted at 20 on bearings 21 mounted on the tractor platform in front of the operator's seat 22 with suitable control levers 23 controlling the operation of the tractor and valves 23' controlling the flow of the fluid in reverse directions through the hose 17, to control the opposite movements or reciprocations of the pistons and piston rods 19 within the cylinders 18. The piston rods 19 are pivotally connected as at 24 to the angular portions or short arms of levers 25 fulcrumed as at 26 in bearings 27 at the sides of the tractor frame and having their longer arms extending forwardly for pivotal connection as indicated at 28 with lugs through which the upper ends of rods 29 are slidably retained against downward displacement by means of nuts 30 on the upper ends of said rods. Springs 31 are disposed on the bearing rods in the forks at the forward ends of the lever arms 25 and collars 32 mounted on the lower portions thereof. The lower ends of the rods 29 are pivoted as at 33 to rearwardly and upwardly extending ears or lugs 34 on angular arms 35.

Pivoted for vertical movement as at 39 to the tractor frame is one end of an operating arm 38, the other end being forked to provide a lower arm 36 and an upper arm 37. A pair of such arms 36, 37, 38 are pivoted to both sides of the tractor frame and the purpose of these arms is to raise and lower the usual bulldozer blade for which the present ditch digger is substituted. For this purpose, the ditch digger is indicated generally at 40 and comprises a frame 41 of rearwardly diverging form, along the outer sides of which cutting blades 42 are bolted or otherwise secured as indicated at 43 along the length thereof, said blades being preferably of steel a half-inch thick and six inches in width.

Rearwardly diverging moldboards 44 are also bolted as at 43 or welded to the frame 41 and are curved somewhat in the form of the moldboards of a plow, except that the front end is provided with a snub nose of substantially inverted V-shaped form, as indicated at 45. In other words, the blade is substantially flat at the front tapering from its greatest width at the bottom up toward the juncture point or edge 46 of the moldboards 44, so that when the device is in use for digging a ditch, the ditch will be provided with a flat bottom of substantially one-foot width and may be cut to the desired depth such as from eighteen inches to three feet and three

feet to fifty-eight inches width at the top or of any lesser depth and width desired.

The moldboards 44 of the digger are connected at their rear edges by a lower transverse bar 47 suitably fastened to wings or gusset plates 49 mounted on the moldboards, said gusset plates having rearwardly extending pairs of apertured ears or lugs 50 to which the lower arms 36, 36 of the forks at the front ends of the arms 38 are pivotally connected as indicated at 51. The upper and lower arms or branches 36 and 37 of the forks being also rigidly connected as indicated at 52. At the top, a cross bar 53 is provided between the rear ends of the moldboards 44 at the edges 48 and above the cross bar 47 and projecting rearwardly thereof. The cross bar 53 is provided at each side with apertured ears or lugs 54 for pivotal connection as at 55 with the upper arms 37. By this connection, the digger is substantially rigid with the arms 38 so as to be swung up and down therewith when operated by hydraulic power, the same as a bulldozer blade, so as to engage or clear the ground. This also will control the depth of the cut.

An adjustable telescopic link 56 is provided between the cross bar 53 and the tapered front end of the digger and comprises the tubular rear section 57 held by diagonal braces 53' and a flange or collar 58 welded or otherwise secured to the cross bar 53. The tubular section 57 is provided along its length with a plurality of aligned upper and lower holes 59. A forward tubular section 60 telescopes within the section 57 and is provided with two opposed holes 61 through which an adjusting and holding pin 62 may be inserted in connection with a plate 62' to engage any pair of the holes 59, to vary the length of the connection or link 56. The forward end of the section 60 is provided with a clevis or bifurcated lug 63 rigidly connected to the section 60 and pivoted at 64 by bolting or otherwise, to an angular bracket or lug 65 secured within the front of the moldboards 44 where they are brought together at the front edge 46. In addition, upper and lower bracket members or gusset plates 66 are welded between the moldboards 44 at the sides of the digger adjacent the front and carry a transverse bar or jaw 67 in which a two-part clamp 68 is pivoted or otherwise secured. This clamp comprises opposed jaws 69 held by bolts 70, or other suitable means, providing a socket for receiving a vertical rod or standard 71 pivoted at 72 at its lower end, to the jaws or plates 73 extending upwardly from the concave sides of a concavo-convex shoe and pressure plate 74. This shoe comprises a plurality of plates shown as two in number, bolted together as indicated at 75 and to which the reinforcing and gusset plates 73 are welded in spaced relation, the shoe being provided with apertured lugs 76 connected by chain sections 77 to a bottom angular angle bracket 78 at the tapered front end of the digger.

The shoe 74 may be adjusted up and down to vary its degree of projection below the digger and cutting blades 42, to level the soil at the bottom of the ditch and keep the point from going too deep into the soil. The ditch will be formed with sides sloping in opposite directions converging downwardly and diverging upwardly in substantially V-shaped formation, and the treads of the tractor will run along the dirt thrown up by the digger so as to level the same and pack the soil thus producing a very fine appearing and complete ditch. It may be also pointed out that

the device may be used after a ditch is dug, for cleaning the ditch.

The adjustable link connection 56 at the top of the digger is for the purpose of varying the pitch or inclination of the blade, the same being lengthened in order to drop the point of the blade and shortened to raise the point thereof by merely removing the pin 62 and inserting the same into any one of the holes 59 and 61 or otherwise providing an adjustment means at this point. By lifting the digger blade, the pin may be removed, and the telescopic link 56 adjusted to the required length, either shortening or lengthening the same, in order to vary the pitch or forward inclination of the blade.

Thus, it will be observed that ditches may be quickly and economically dug, leaving the ditch entirely clear of all debris, rocks, roots, brush and small trees. Ditches may be dug at the required depth and width with a flat bottom being formed therein by reason of the width of the blade or snub nose at the front of the digger. Also, it is possible to employ the device to dig an irrigation ditch near a fence; and since such ditches require frequent cleaning, the present device can also be employed to carry out this cleaning operation.

It is also to be understood that the ditch digger in addition to being used on wheeled tractors and endless tread tractors, may be used on larger cable controlled tractors as well as the smaller hydraulic type of tractor shown and described, as many of the larger tractors using the bulldozer blade manipulate it with a cable operated from a winch in the rear instead of hydraulic lift such as shown and described. When employed with the larger cable controlled tractors, it will be understood that the ditch digger is attached in place of the bulldozer blade as previously set forth. Also, the size of the ditch digger blade may be varied, to form ditches of different shapes and dimensions.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention what is claimed as new is:

A ditch digger adapted for attachment to a tractor having side arms pivoted at the rear, hydraulic cylinders pivoted on the tractor, levers pivoted on the tractor in line with the cylinders and pivotally connected to the pistons of the latter at their angular portions, a cross member at the front of the tractor, rods connecting the front of the levers to the cross member, springs disposed on said rods between said levers and said cross member to cushion the up and down movements of the arms, said arms having forks at the forward ends thereof vertically one above the other, a digger comprising rearwardly diverging frame members, blades at the sides of said frame members along the bottom, a front nose portion in front of the blades, moldboards extending upwardly from the blades and brought together at a sharp edge at the front, lugs pivotally connecting the moldboards and frame to the lower fork members for vertical swinging movement, a cross-bar secured between the rear portions of the moldboards, adjustable telescopic links terminally pivoted to the front of the frame and moldboards at the top and to said cross bar to vary

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the forward inclination or pitch of the blades, and an adjustable shoe between the blades and moldboards and anchored above the blades and at the front for adjustment up and down, to vary the depth of cut of the blades and adapted to track in the bottom of a ditch to produce a ditch having a flat bottom and sloping sides.

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The following references are of record in the file of this patent:

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