June 2, 1959 D. A. RALSTON 2,888,996

TRACTOR-DRAWN LAND FLOAT WITH DITCHING SHOES

Filed Feb. 29, 1956 2 Sheets-Sheet 1

FIG. 1

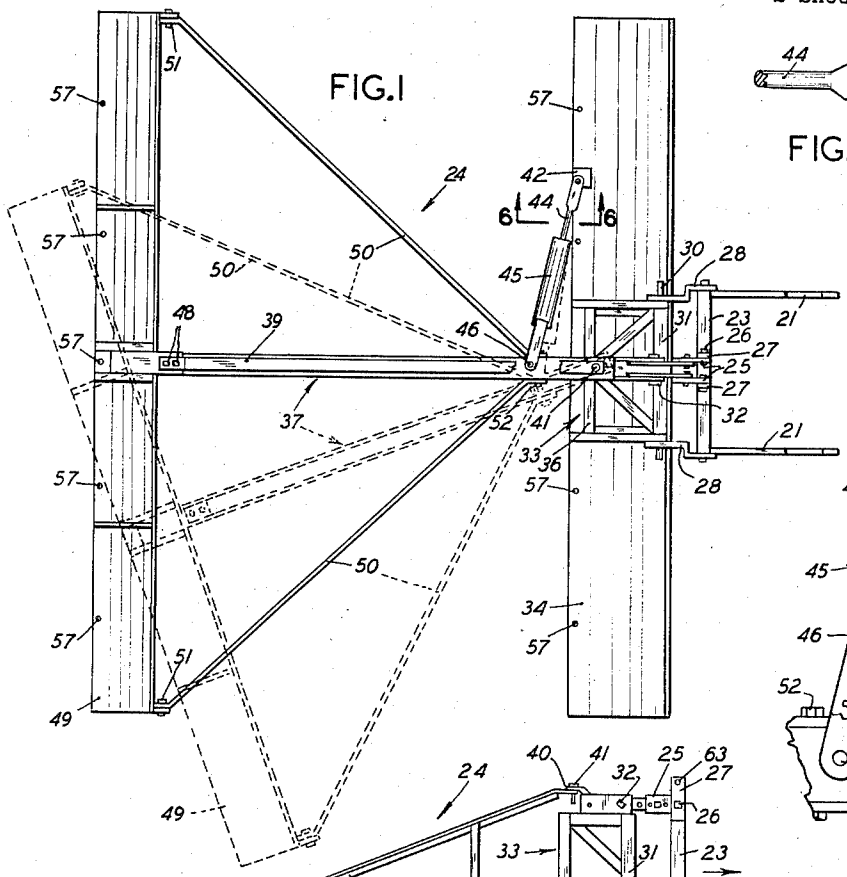


FIG. 6

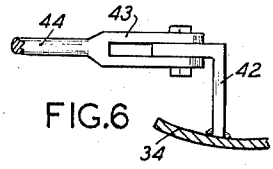


FIG. 5

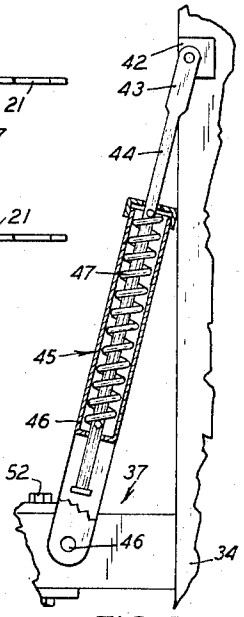


FIG. 2

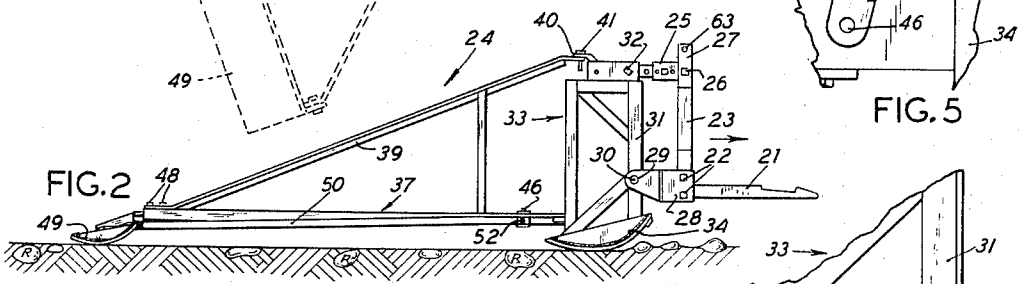


FIG. 4

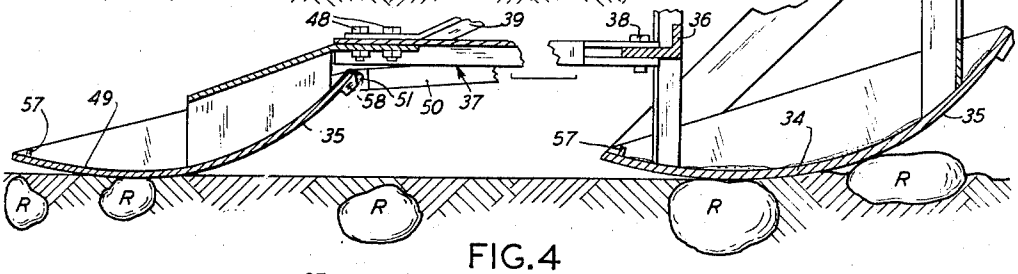
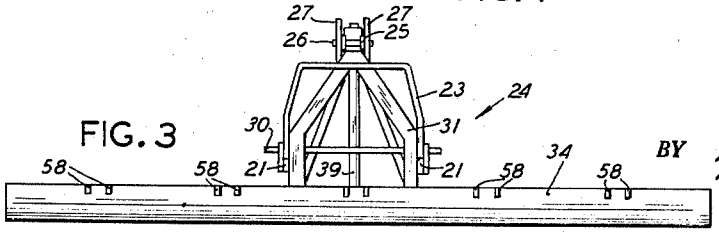


FIG. 3



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TRACTOR-DRAWN LAND FLOAT WITH DITCHING SHOES

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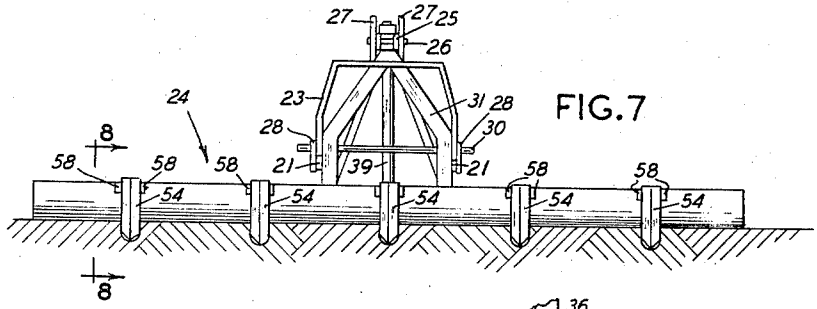


FIG.7

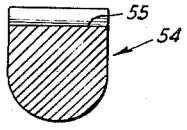


FIG.11

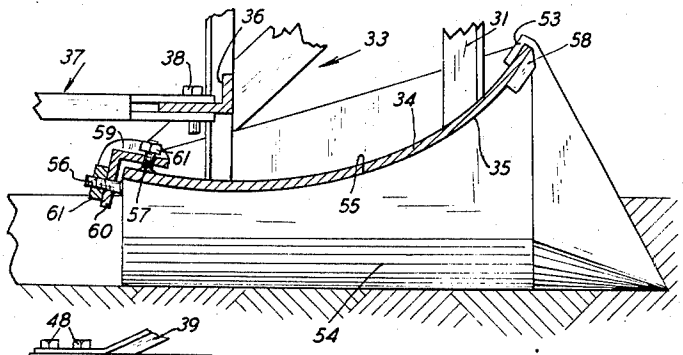


FIG.8

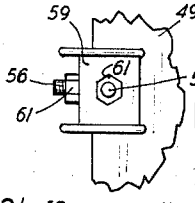


FIG.12

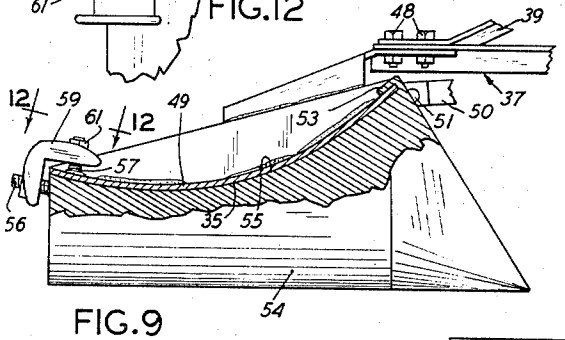


FIG.9

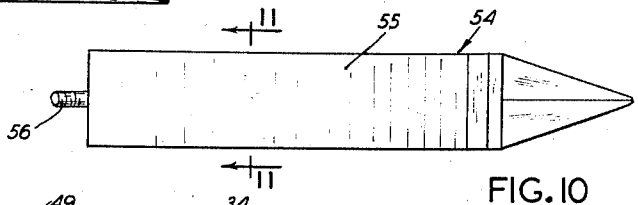


FIG.10

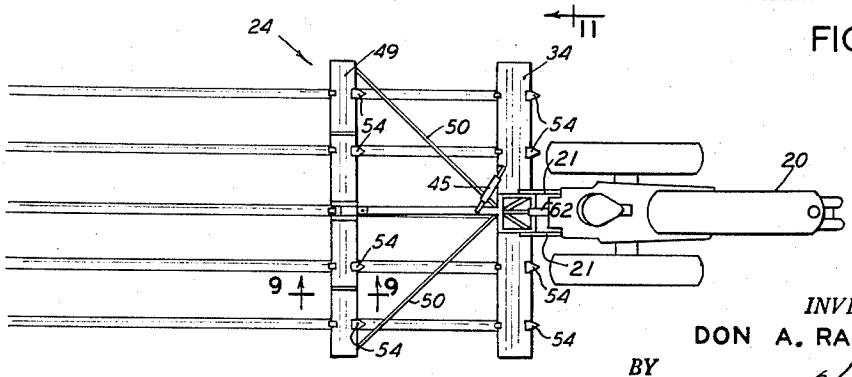


FIG.13

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2,888,996

TRACTOR-DRAWN LAND FLOAT WITH DITCHING SHOES

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Application February 29, 1956, Serial No. 568,531

1 Claim. (Cl. 172—448)

My present invention is a tractor-drawn land float, and more particularly one that is provided with removable ditching shoes whereby the float may be employed to smooth a seedbed surface and/or provide water courses therein.

One object of the invention lies in the provision of a float having front and rear parallel runners provided with means for securing to the pair of hydraulically operated drawbars of a tractor, and having an adjustable link by means of which the downward pressure on the front and rear runners may be adjusted according to manual selection.

Another object of the invention lies in the provision of an implement of the type described which is very inexpensive to manufacture and comprises a minimum number of parts assembled with facility, and therefore one which is not likely to get out of working condition and is very effective for its purpose of preparing the surface of the soil for a seedbed or other requirement.

These and other objects of the invention will become apparent during the course of the following specification.

In the accompanying drawing forming a part of this specification and in which like numerals are employed to designate like parts:

Figure 1 is a plan view of my improved float showing the rear runner in rearwardly spaced parallel relationship to the front runner in full line position and disposed at an angle thereto in the broken line position;

Figure 2 is a vertical side elevation of the improved float;

Figure 3 is a front elevation of the float;

Figure 4 is an enlarged longitudinal cross section having portions broken away and showing the runners of the float forcing rocks under the surface of the ground;

Figure 5 is a fragmentary plan view having portions in cross section and showing the drag-link centering device;

Figure 6 is a further enlarged fragmentary vertical elevation with portions in section showing the runner attaching means for the centering device on the plane indicated by line 6—6 of Figure 1;

Figure 7 is a front elevation of the float showing the ditching shoes attached;

Figure 8 is an enlarged vertical longitudinal cross section showing a ditching shoe attached to the front runner on the plane indicated by line 8—8 of Figure 7;

Figure 9 is a view similar to Figure 8 and showing a ditching shoe attached to the rear runner on the plane indicated by line 9—9 of Figure 13;

Figure 10 is a plan view of one ditching shoe;

Figure 11 is a fragmentary cross section through a ditching shoe on the plane indicated by line 11—11 of Figure 10;

Figure 12 is a fragmentary plan view of one bracket for attaching a ditching shoe to a runner as at line 12—12 of Figure 9; and

Figure 13 is a plan view of the improved float being drawn by a conventional wheeled tractor.

Referring now to the drawing with a greater degree of

particularity, I have shown in Figure 13 a conventional tractor 20 which is provided with a pair of rearwardly extending hydraulically lifted drawbars 21 which are found to be present upon many of the conventional tractors on the market today such as the wheeled type disclosed.

The rearward ends of the drawbars 21 are secured at 22 to the lower ends of a yoke 23 disposed in a plane extending laterally of the float indicated in its entirety by the numeral 24. A link 25, which is adjustable in length, is pivotally secured on a laterally extending horizontal bolt 26 supported in upstanding brackets 27 carried by the yoke 23. Plates 28 are rigidly secured to the rearward ends of the drawbars 21 and are provided with means 29 at their rearward end for journaling the drawbars on the land float. This is accomplished by passing the laterally extending hitch bar 30 through the apertures 29 of the plates 28 and also through a forward member 31 of the float frame. Thus the float is pivotally interconnected to the rearward ends of the drawbar 21.

The adjustable link 25 is also pivotally interconnected at 32 to the frame member 31, and it will be seen that in Figure 2 of the drawing the frame member 31 is disposed in a vertical plane parallel to the plane of the yoke 23. However, by lengthening the adjustable link 25 the plane of the frame member 31 may be tilted or angled with relationship to the yoke 23, the purpose of which will be hereinafter fully disclosed.

The frame member 31 is one member of a frame 33 which may be of any suitable construction to provide means at its upper end for securing the link. Intermediate its length it is arranged to pivotally secure the drawbars, and at its lower end it carries a laterally extending front runner 34. The runner 34 may be secured to the frame 33 in any convenient manner, as by welding.

Inspection of Figure 4 in particular will disclose that the front runner is concavo-convex or a fragmentary portion of a cylinder. The runner has its convex face 35 disposed downwardly to contact the surface of the ground over which the float is to be drawn. Also in Figure 4 it will be seen that the frame 33 carries a cross member 36 to which the drag link 37 is pivotally connected by journal pin 38. It will also be noted that the drag link 37 is provided with a brace bar 39 which is rigidly fixed at the rear end of the drag link and extends forwardly therefrom in diverging relationship and is pivotally interconnected at 40 to the upper end of the frame 33 by means of a journal pin 41. It will thus be seen that the drag link is mounted for swinging movement on a plane parallel to a plane of the runner 34, but is held against vertical tilting movement or tilting movement perpendicular to said plane or runner 34.

Runner 34 is provided on its upper or concave face with a bracket 42 (Figure 6) to which the bifurcated end 43 of a connecting rod 44 constituting a portion of a resilient centering device is pivotally secured. The opposed end of the centering device 45 is pivotally secured at 46 to the drag link 37 and, particularly in Figure 5, it will be seen that the centering device contains within a cylindrical housing 46 a compression spring 47 which will be compressed whenever the drag link 37 is pivotally removed from its normal position at right angles to the front runner 34.

At its rearward end, the drag link 37 is rigidly secured as by bolts 48 to the rear runner 49, and, in addition, angular brace bars 50 are secured at 51 to the ends of the rear runner 49 and are secured to the drag link 37 adjacent to its forward end at 52. It will thus be seen that the drag link 37 is rigidly secured in right angle relationship to the rear runner 49.

It will also be noted that the drag link 37 is secured in vertically spaced relationship to the forward edge of the

rear runner **49** so that the runner is adapted to receive at its midpoint a hook **53** of a ditching shoe **54**.

Each of the ditching shoes is shaped as disclosed in particular in Figures 8, 9, 10, and 11, and has a hook at the forward end of a concave face **55** which is shaped coincident to the arcuate configuration of the front and rear runners **34** and **49**, and at its rear end each ditching shoe is provided with a stud bolt **56**.

It will also be noted particularly in Figures 1 and 4 that the upper concave faces of the front and rear runners **34** and **49** are provided with spaced stud bolts **57** which are welded or otherwise secured thereto, while the convex faces **35** are provided at their front marginal edge portions with pairs of spaced aligning beads **58** (Figures 3 and 7). It will be noted that the ditching shoes **54** are hooked over the front edge of the forward runner **34** with the shoes disposed between pairs of aligning beads **58**, and thence an L-shaped bracket **59** having apertures **60** formed therein is applied with the apertures receiving the stud bolts **56** and **57**, and thence nuts **61** are applied to the stud bolts to releasably secure the ditching shoes thereon.

Under varying soil conditions, it is found necessary to change the downward pressure applied by the front and rear runners **34** and **49**. This may be accomplished by adjusting the length of the link **25** and shifting the frame member **31** from a plane parallel to that of the yoke **23**. As can be understood in viewing Figure 2, if the adjustable link **25** is lengthened, the frame member **31** is caused to pivot about the coupling bar **30**, thus lowering the rear runner **49** with respect to the front runner **34** and therefore providing less pressure upon front runner **34** and an increased pressure on the rear runner **49**. If it is found desirable, such as when leveling a piece of ground having large rocks R, pressure may be increased upon the front runner by shortening the adjustable link **25** and causing the frame member **31** to pivot about the coupling bar **30** to raise the rear runner **49**. It should be understood that the rear runner may not necessarily be raised free of the ground but it will be raised sufficiently to cause a greater amount of the downward pressure caused by the weight of the float to be applied to the front runner since the front runner will serve as a fulcrum between the tractor and the rear runner **49**.

Conventionally tractors are provided with either an adjustable or a rigid link **62** (Figure 13) which is pivotally interconnected to the tractor frame on a laterally disposed horizontal axis as is well known and at its forward end is to be pivotally secured in the eye **63** (Figure 2) so that the effect is to secure the link **25** to the frame of the tractor. When an adjustable link **62** is employed adjustment may be made at this place on certain types of tractors. However, the device is made to be used upon all commercial tractors and therefore the adjustable link **25** is required for those that do not have this adjustment and supplemental to those that do.

Having described my invention, I claim as new and desire to secure by Letters Patent of the United States the following:

In combination with a tractor having a pair of rearwardly extending hydraulically lifted drawbars, a float assembly secured to the ends of the drawbars and additionally supported at a third point above and between the drawbars by an axially adjustable link connected relative to the frame of the tractor; the float assembly comprising front and rear laterally extending parallel arcuate runners secured together for coincident movement and having downwardly disposed convex faces; each said runner having pairs of spacing beads formed on said convex face on its forward marginal edge portion; a stud bolt secured to the upper face of said runner midway between each said pair of beads and at its rear marginal edge portion; ditching shoes having an upper face commensurate in configuration to the arc of said runners and each having a hook at its forward end for hooking over the forward edge of said runners and disposed between a pair of said beads; a rearwardly extending threaded stud at the rear end of each said shoe; an L-shaped bracket having apertures receiving said studs; and nuts securing said bracket on said studs and thereby releasably securing said shoe to said runners.

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