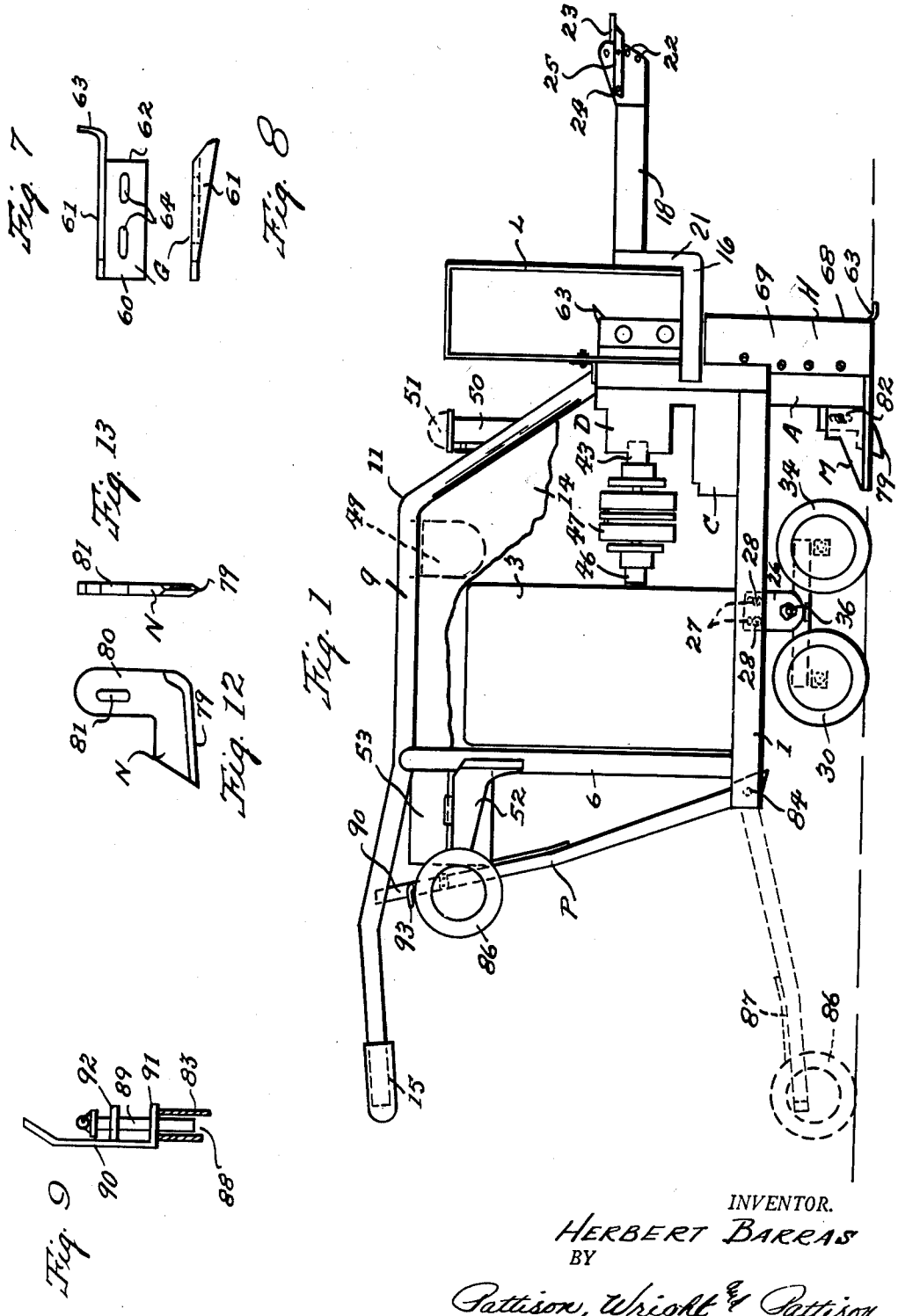
March 13, 1956 H. BARRAS 2,737,734

RIDING PLATFORM ARRANGEMENT FOR WHEEL-TYPE DITCHING MACHINE

Filed Oct. 24, 1949

4 Sheets-Sheet 1



INVENTOR.
HERBERT BARRAS
BY
Pattison, Wright & Pattison
ATTORNEYS

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RIDING PLATFORM ARRANGEMENT FOR WHEEL-TYPE DITCHING MACHINE

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Fig. 3

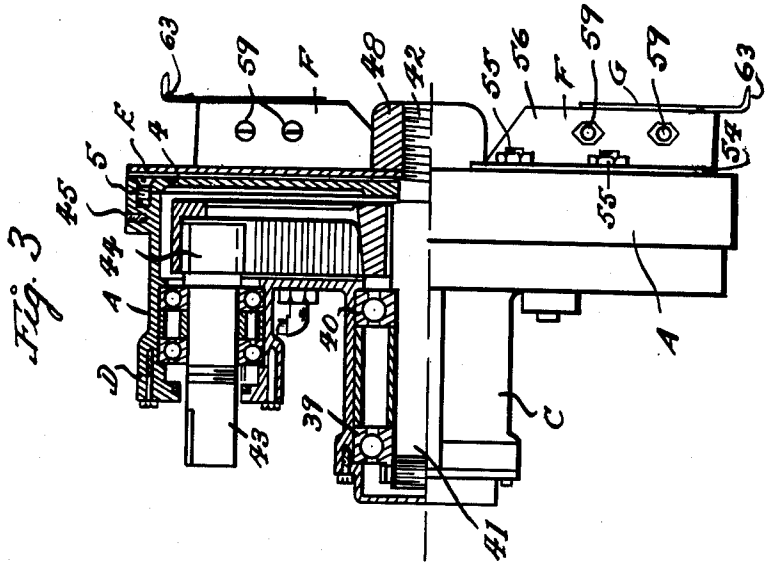
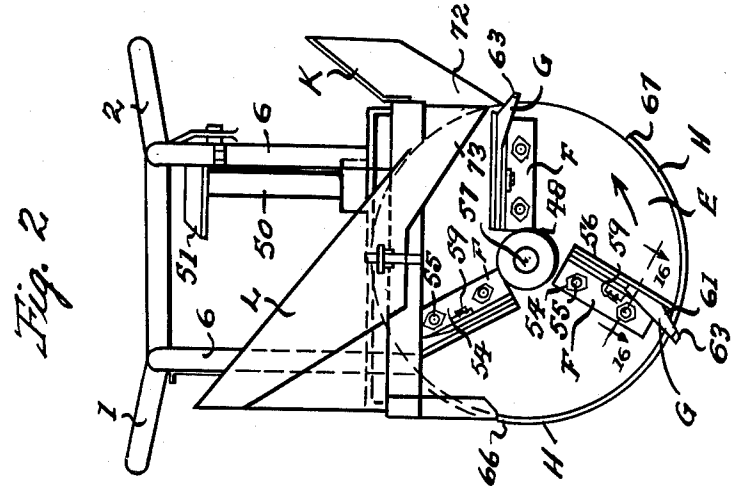


Fig. 2



INVENTOR.

HERBERT BARRAS

BY

Pattison, Wright & Pattison

ATTORNEYS

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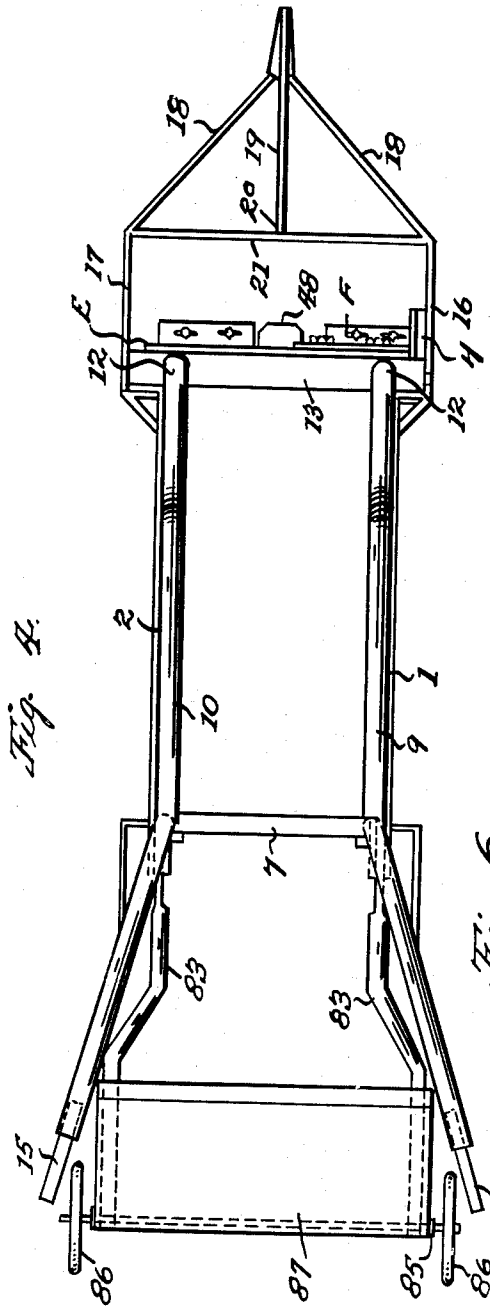


Fig. 4.

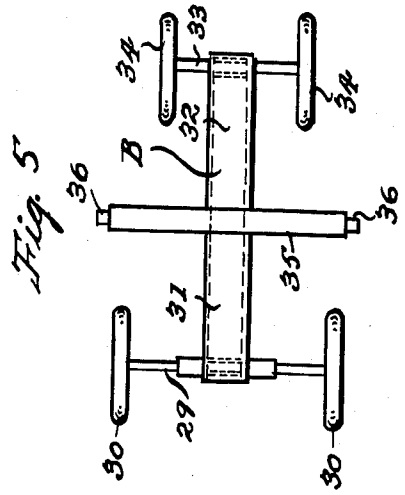


Fig. 5

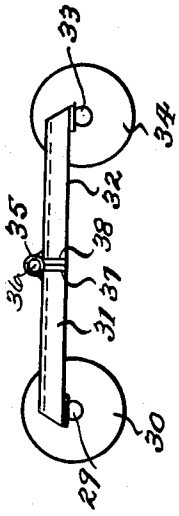


Fig. 6

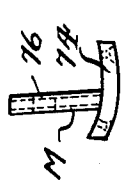


Fig. 11

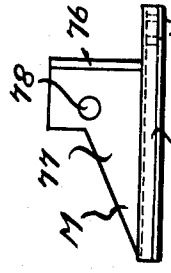


Fig. 10

INVENTOR.

BY HERBERT BARRAS

Pattison, Wright & Pattison

ATTORNEYS

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RIDING PLATFORM ARRANGEMENT FOR WHEEL-TYPE DITCHING MACHINE

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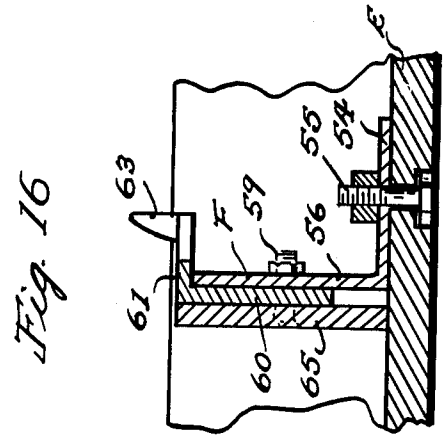


Fig. 16

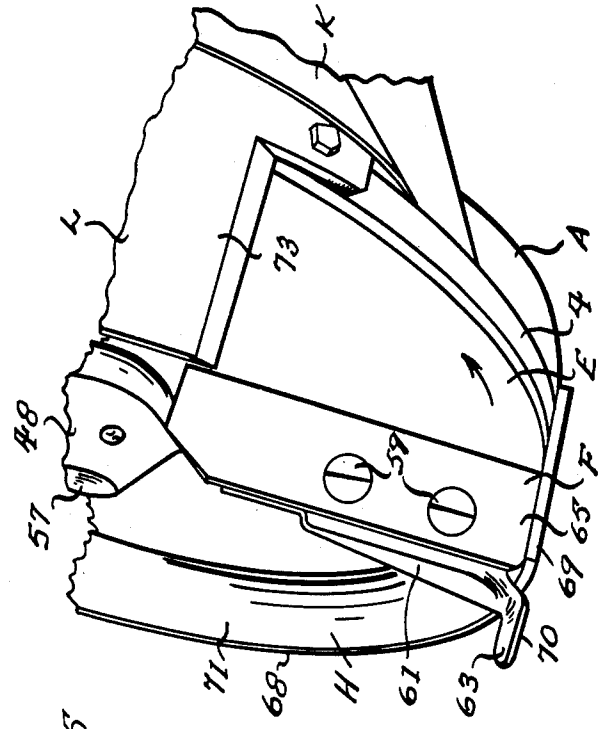


Fig. 15

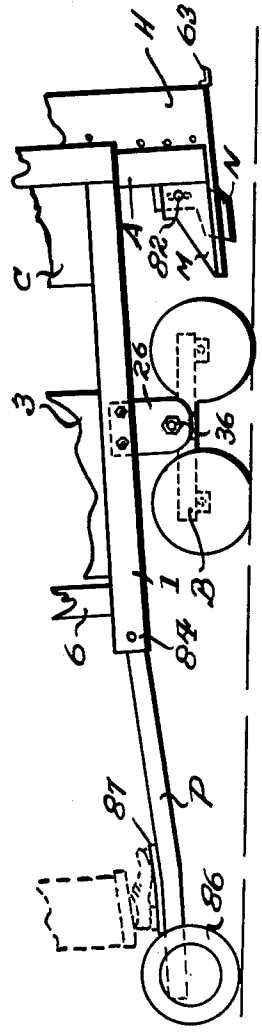


Fig. 14

INVENTOR.
HERBERT BARRAS
BY
Pattison, Wright & Pattison
ATTORNEYS

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2,737,734

RIDING PLATFORM ARRANGEMENT FOR WHEEL-TYPE DITCHING MACHINE

Herbert Barras, Baldwin, La.

Application October 24, 1949, Serial No. 123,167

2 Claims. (Cl. 37—92)

The present invention pertains to a drain cleaner and has as its primary object the provision of a labor saving device so simple and efficient in operation that the farmer not only can but will use the device.

The objects, advantages and improvements of the cleaner both in its construction and use will appear in and be understood from the following description when read in the light of the accompanying drawings.

Among the advantages of the machine is the provision of a movable and selectively usable riding platform.

Another advantage is the provision of a novel and improved tandem wheel support for the machine.

A further object and advantage is the provision of novel and improved cutter blades and dirt and trash deflectors.

Another object of the invention is the provision in a machine of the character described of greater stability by reason of the support of the machine and the utilization of a torque guide.

A still further object of the invention is the provision of a novel and improved means of connecting the power unit to the cutter unit.

A still further object of the invention is the provision of a machine of the character described in which practically all of the power necessary to the operation of the machine is provided by a suitable motor with the result that the strain upon the animal pulling the machine is comparatively small.

Although not limited to this specific use the cleaner is primarily designed for use in the sugar cane industry to clean the cross drains in a cane field. These drains ordinarily are from 16 to 18 inches in width and where they cross the rows of planted cane the ditches are of substantially the same depth as their width. The cleaner must accordingly be compact enough to operate in this limited space and must be power operated as the space is not sufficiently wide to make it possible to couple a sufficient number of horses or mules to the cleaner to obtain from them the power to drive the cleaner. The cleaner is accordingly power driven with the exception of the movement of the cleaner along the ditch and sufficient power for this can be obtained from a single animal for which there is sufficient space in the ditch between the rows of cane.

Broadly the cleaner embodies a series of rotating cutter blades and a centrifugal discharge from the cross drain ditch and suitable motor power means to operate the foregoing. The motor utilized as the power unit is sufficiently powerful to accomplish the cleaning of the drain with little or no strain upon the animal pulling the machine through the drain. Actually in operation the machine, in addition to removing loose or soft dirt and trash which may have accumulated in the drain, uniformly cuts the side of the drain as the machine moves along the length of the drain.

Heretofore the conventional and usual method of cleaning and cutting cross drains after plowing and mechanical cultivation of the cane field has been to run a plow

in the path of the desired cross drain. A crew of laborers with shovels followed the plow to finish cleaning the drain and to remove the excessive dirt deposited on the ground between the bottoms of the rows by the plow. The laborers in their shovelling action deposited this dirt only a few feet back from either side of the drain with the result that rain soon washed this dirt back into the drains because of the close proximity of the dirt to the sides of the drain. Furthermore the prior practice has resulted in building a hill near the edge of the drain and a depression further back in the field where rain water collected to form soft soggy spots detrimental to the crop.

The present invention eliminates the crew of laborers and permits the drain to be cleaned by a single operator. This is of great advantage because heretofore the crew of laborers spent substantially the entire cultivating season cleaning drains. Additionally, the present ditch cleaner overcomes the building up of high spots near the sides of the drain with the resultant soft soggy spots by spreading the trash and dirt cleaned from the drain back from the side edges thereof a distance as great as fifteen to twenty feet and spreads it in a uniform manner. This avoids the re-washing of the dirt into the drain and therefore maintenance of the drain in proper condition requires much less attention than has been the case heretofore.

In consideration of the following description attention is directed to the fact that where the cross drain cuts through or crosses the rows of cane the bottom of the drain is 16 to 18 inches below the tops of the rows. At these points the cleaner must lift the dirt and trash from the bottom of the drain to a point sufficiently high to permit its discharge across the tops of the rows so that it can be distributed into the field back from each side of the drain.

A machine embodying the inventive concept is illustrated by the accompanying drawings wherein:

Fig. 1 is a view in side elevation of the machine, the lowered position of the riding platform being illustrated in dotted lines.

Fig. 2 is a front view of the machine.

Fig. 3 is a fragmentary view illustrating the assembly which drives the cutter disc, a portion of the view being broken away and shown in vertical section, and a showing of the skirt H, skid M and guide N being omitted.

Fig. 4 is a top plan view of the frame of the machine with an illustration of the cutter disc being included.

Fig. 5 is a top plan view of the wheeled supporting carriage for the machine.

Fig. 6 is a view in side elevation of Fig. 5.

Fig. 7 is a side view of one of the cutter knives.

Fig. 8 is a top view of the cutter knives.

Fig. 9 is a detailed view of the lock for holding the riding platform in an elevated position, a portion of the platform frame being shown in vertical section.

Fig. 10 is a view in side elevation of the skid.

Fig. 11 is an end view of the skid.

Fig. 12 is a view in side elevation of the guide.

Fig.13 is an end view of the guide.

Fig. 14 is a fragmentary view in side elevation illustrating the tilt imparted to the machine when the riding platform is utilized.

Fig. 15 is an enlarged fragmentary perspective view illustrating the front face of the cutter disc and the attached cutter blades.

Fig. 16 is a fragmentary vertical sectional view taken on the line **16—16** of Fig. 2 looking in the direction indicated by arrows.

The vehicle comprising the present improved cleaner embodies a base frame having spaced apart and parallel side stringers **1** and **2** which at their rear ends support a suitable power unit such as a gasoline engine designated

as an entirety by 3. A circular housing, designated as an entirety by A, see Fig. 3, interconnects and is supported between the front ends of the side stringers and extends upwardly above and also downwardly below the frame. This housing has at its front end a closure plate 4 which is removably secured in place by a plurality of screws or bolts 5.

At its rear end the frame has upwardly extending side frame members 6 the upper ends of which are secured together by a cross frame member 7. If desired the members 6 and 7 can be a single piece bent into an inverted U-shape. The upper side frame members 9 and 10 have their front ends bent downwardly and forwardly as at 11 and their front ends 12 are connected to the top of a transverse cross frame member 13 positioned above the housing A. The space defined by the frame above the base stringers 1 and 2 can if desired be closed in by plates, such as the side plate 14, see Fig. 1, in much the same manner as is the hood of an automobile.

The upper side frame members 9 and 10 extend rearwardly of the vehicle and are inclined outwardly and have at their extreme outer ends suitable hand grips, 15.

A draw frame is provided at the front of the vhicle and comprises a pair of forwardly extending arms 16 and 17 the forward ends 18 of which are bent inwardly toward one another and are secured to a draw bar 19 the inner end 20 of which is secured to a cross frame member 21. The outer and forward end of the draw bar is provided with a series of spaced apart holes 22. A towing hitch 23 has its inner end pivotally connected to the draw bar as at 24 and the vertical position of the towing hitch is adjustable by swinging it about its pivot 24 and inserting a pin 25 through the proper draw bar hole 22.

The vehicle is supported upon a wheeled carriage designated as an entirety by B, see Fig. 5, and the vehicle is vertically adjustable on this cariage. Approximately intermediate the length of each of the side stringers 1 a hanger 26 is provided. The upper ends of these hangers are provided with spaced apart holes 27 through which pass suitable bolts 28. By means of this construction the hangers can be adjusted vertically with respect to the frame. The carriage comprises a rear axle 29 having on its outer ends the wheels 30. This axle is secured to the rear end of a rear bar 31. A front bar 32 carries at its front end an axle 33, shorter than the rear axle 29, on the outer ends of which are the front wheels 34. The inner ends of the front and rear bars 31 and 32 are rigidly secured to a shaft 35 the reduced ends 36 of which are rotatably supported in the oppositely positioned hangers 26 as is indicated by the numeral 36 in Fig. 1 of the drawings. When the vehicle is on level ground the inner ends 37 and 38 of the bars 31 and 32 are in abutment.

The tandem wheel support for the vehicle is such that a very stable support is provided. Due to the fact that the front and rear wheels do not track the vehicle is not easily forced out of balance by holes or large clumps of dirt as would be the case if the wheels did track. By reason of the front and rear wheels being permitted to raise and lower independently of one another the vehicle is able to accommodate itself to an uneven terrain. The importance of being able to raise and lower the hangers 26 will be hereinafter referred to.

The main housing A has a rearwardly extending supplemental housing C having therein suitable bearings 39 and 40 which rotatably support the cutter disc shaft 41. This shaft extends outwardly through the housing front plate 4 and has an outer threaded end 42.

The housing is provided with a second supplemental rearwardly extending housing D in which is suitably rotatably supported a drive shaft 43 having on its outer end a small gear 44 which is in driving mesh with the inner toothed perimeter of the large drive gear 45 mounted upon and having driving connection with the shaft 41. The shaft 43 has suitable drive connection with the main engine shaft 46 through a suitable coupling 47.

The cutter disc E is a circular plate of substantially

the same size as closure plate 4 of the housing A and is provided centrally with an interal threaded hub 48 which is threadedly secured to the outer threaded end 42 of the shaft 41 for driving connection thereto.

By reason of the construction thus far described it will be seen that the engine through the shaft 43, the gears 44 and 45 and the shaft 41 rotate the cutter disc E

The muffler for the engine is hung between suitable bracket hangers 49 depending from the upper side frame members 9 and 10. The air intake for the engine is in the form of a pipe 50 which extends outwardly from the enclosed engine space and is provided at its inlet end with a suitable air cleaner 51. The rear corner uprights of the frame are each provided with a rearwardly extending bracket 52 upon and between which is supported a suitable fuel tank 53.

The circular cutter disc E carries a plurality of cutter blade carriers F, in this instance three are shown, all of which are identical to one another. The carriers are of an L-shape in cross sectional configuration and have one leg 54 bolted as at 55 to the face of the disc while its other leg 56 extends outwardly and forwardly at right angles. It is to be noted that these legs are offset in respect to the center axis 57 of the disc and have their outer ends stopping short of the peripheral edge of the disc. Each of the legs is provided with a pair of spaced holes through which by means of suitable bolts 59 the cutter blades G are adjustably secured to the carriers as will be explained.

The cutter blades each comprise a plate composed of a leg 60 having extending at right angles to its upper edge a second leg 61 the outer end of which extends outwardly beyond the outer end 62 of the leg 60 and terminates in a cutter blade 63 which is disposed at right angles to the leg 61. The leg 60 is provided with spaced slotted openings 64.

A cutter blade is secured to and carried by each carrier. To accomplish this a plate 65 is provided. The bolts 59 pass through the plate 65 and the slots 64 of the cutter blade leg 60 and through the leg 56 of the carrier F. Accordingly the cutter blade legs are disposed between the plate 65 and the carrier plate legs 56 as illustrated in Fig. 16. The cutter blades are adjustable longitudinally of the carrier by reason of the elongated slots 64.

Viewing the machine from the front, as in Fig. 2, it will be seen that a skirt or lip H of semi-circular form is provided and extends from a point 66 at the left side of the machine and slightly above the center axis 57 of the cutter disc around to the point 67 which is about half way up to the center axis 57 of the cutter disc at the right-hand side of the machine. This skirt or lip, see Fig. 1, extends forwardly of the cutter disc substantially the same distance as do the legs 56 of the carriers F. The leading edge of this skirt is bevelled as at 68, see Fig. 15. The cutter blades 63, as illustrated in Fig. 15, are adjusted to be disposed in front of the leading edge 68 of the skirt and disposed to rotate in a plane parallel to but beyond the outer face 69 of the skirt. The cutter blades each have a cutting edge 70 and as the cutter disc E is rotated by the engine the cutter blades, which rotate with it, will cut from the side walls and bottom of the ditch a path having a width greater than the diameter of the cutter disc E to thus permit free passage of the machine along the ditch. Due to the path cut by the cutters 63 substantially no strain whatsoever is necessary on the part of the animal pulling the machine along the ditch as all of the cutting action is performed by the cutter blades 63 which are driven by the engine 3.

As the machine is pulled along the ditch in the path cut by the cutter blades 63 the dirt cut by the blades, trash and any other foreign matter in the ditch gathers against the face of the cutter disc E and rests upon the inner face 71 of the skirt or lip H. The machine is adjusted on its carriage B so that when disposed in a horizontal plane, as illustrated in Fig. 1, the leading edge of the skirt will not dig into the bottom of the ditch. There is additional

means to guard against this eventuality which will be hereinafter described. As the cutter disc is rotated counterclockwise the dirt and other loose matter in the ditch which has gathered against the cutter disc E, as described, is successively engaged by the plates **65** and thrown or discharged from the ditch by centrifugal force.

Viewing the machine from the front, as in Fig. 2, it will be seen that two dirt and trash deflectors or hoods are provided. The one at the right side of the machine and designated K has its inner and lower open end **72** terminating on a line slightly above the center axis **57** of the cutter disc. A deflector L at the left side of the machine has its inner and lower end **73** meeting the inner lower end of the deflector K. The inner lower end of the deflector K is spaced well above the right-hand end **67** of the skirt H. In the event the machine is operating in a ditch or drain which is comparatively shallow and from which only a small amount of dirt or trash is discharged this dirt and trash will be thrown outwardly through the deflector K. This is due to the fact that the carriers F will pass by the top of the ditch or drain before they enter the deflector L. Accordingly the dirt and trash being propelled by the carriers will pass outwardly and to the side of the ditch through the deflector K. However when the machine is in a deeper ditch, such as on the sides of which would substantially close the space between the end **67** of the skirt H and the inner lower end **73** of the deffector L the dirt and trash in this event would be lifted and carried to and dispensed through the deflector L to the opposite side of the ditch. Accordingly it will be seen that in a ditch the upper edges of which are below the center axis **57** of the cutter disc the discharge from the ditch is almost entirely through the deflector K although some discharge might result through the deflector L. In a ditch the upper edge of which is above the axis **57** the discharge will be substantially entirely through the deflector L.

As explained, the depth of the cut made by the cutter blades **63** is determined by the adjustment of the machine frame on the hangers **26**. It has also been explained that the machine frame is rotatably mounted on the carriage B due to the fact that the ends **36** of the shaft **35** are rotatable in the hangers **26**. In respect to the pivotal support provided by the shaft **35** for the machine the weight of the machine is distributed so that it is heavier forward of the shaft **35** than rearward thereof. The tendency of the machine is therefore to dip down at its forward end. This dipping would cause the leading edge of the skirt to dig into the ditch bottom were it not for the fact that a shoe or skid M were provided. This skid is specifically illustrated in Figs. 10 and 11 and appears also in Fig. 1. The skid comprises a ground engaging face or plate **74** the forward end of which is secured to the bottom of the housing A by suitable screws or bolts **75**. A vertical plate **76** abuts the rear face of the housing A and from this a fin **77** extends rearwardly and is provided with a bolt reception opening **78**. It will be seen that the skid or shoe makes the vertical adjustment of the machine in the hangers **26** effective. This skid or shoe also adds stability to the machine in its travel through the ditch.

A guide N, see Figs. 12 and 13, is associated with the skid and comprises a horizontally extending ground engaging edge **79** and a vertical leg **80** provided with an elongated bolt reception opening **81**. This guide is suitably secured to the skid by means of a bolt **82** or the like which passes through the skid opening **78** and the guide slot **81**. This arrangement provides a vertical adjustment for the guide by which the depth of engagement of the guide with the ground is selectively obtainable. This guide, like the skid, adds to the stability of the machine when it is in operation.

A riding platform P is associated with the rear end of the machine and is used only when the machine is travelling to and from the areas in which it is to be used. The purpose of this platform is to cause the elevation of the

front end of the unit so that as the unit is pulled from area to area the unit front end will be above and out of engagement with the ground. The platform comprises a pair of spaced rearwardly extending side frame members **83** the forward ends of which are pivotally secured to the rear ends of the main frame members **1** and **2** as at **84**. An axle **85** interconnects the rear ends of the frame elements **83** and is provided at its ends with ground engaging wheels **86**. Forwardly of the wheels a transversely extending platform **87** is provided upon which the operator of the machine may stand. When the ditcher is in operation the platform P is swung into a vertical position about its pivotal support **84** as illustrated in Fig. 1. One of the frame elements **83**, see Fig. 9, is provided with an open end to provide a socket **88** for the reception of a removable pin **89** the function of which is to hold the platform in the elevated position illustrated in full line in Fig. 1. A bracket **90** depends from one of the upper frame elements, **9** or **10**, and is provided with a pair of spaced ears **91** and **92** each of which is provided with an opening for the reception of the aforementioned pin **89**. This pin is provided with an operating handle **93**.

By lifting the pin **89** out of engagement with the socket **88** the riding platform can be lowered to the position illustrated in dotted line in Fig. 1 wherein the wheels **86** are in engagement with the ground. Upon the operator stepping upon the platform **87** the action takes place which is illustrated in Fig. 14 of the drawings. The operator's weight overcomes the greater weight of the machine which is forward of its pivotal support the shaft **35**, with the result that the unit is rotated on the shaft **35** and elevated above the ground as illustrated in this figure of the drawings. Ordinarily when the riding platform is down and the front end of the machine is elevated the draft animal, or power unit, utilized to pull the ditcher is connected to the lowermost hole **22** in the draw bar.

To those familiar with the art the advantages of the machine will be readily apparent. The unit accomplishes all the enumerated objects and constitutes a great labor saving device. The centrifugal force with which the dirt and other matter in the ditch is discharged is sufficient to deposit it far to each side of the ditch. The cutter blades can be quickly removed and replaced. All of the power necessary to the cutting operation is performed by the engine rather than the draft animal or unit. The depth or degree of cut is readily adjustable by vertically adjusting the frame on the supporting hangers **26**. The tandem wheel carriage provides the stability referred to and so desirable in a unit of the present nature. The selectively usable riding platform assures rapid transportation of the device when not in use and guards the cutter blades against injury during transportation.

Departures from the specific constructions illustrated and described can be made without departing from the inventive concept and the invention is accordingly only to be limited within the scope of the hereinafter claims.

What I claim is:

1. In a mobile ditching machine, a carriage provided with ground engaging wheels, a supporting base horizontally pivotally connected to the carriage and provided at its front end with ground working means, the weight of the machine being so distributed in respect to the carriage that the front end of the base normally tilts downwardly to bring the ground working means into engagement with the ground, the base being provided at each of its sides with rearwardly extending handles by which the operator of the machine may cause the front end of the machine to be elevated, a platform connected to and extending substantially horizontally and rearwardly from the rear end of the base, the platform when being utilized being disposed beneath the handles, the platform providing a support normally above and in spaced relationship to the ground upon which the operator of the machine may ride to cause by his weight thereon the front end of the machine to be elevated, the platform being pro-

vided with wheels, the platform wheels having engagement with the ground when a rider is on the platform, and the platform being movably mounted on the base to permit it when out of use to be moved to a position out of the way of the feet of the machine operator to permit the operator to walk at the rear of the machine with his hands in engagement with the handles.

2. In a mobile ditching machine, a carriage provided with ground engaging wheels, a supporting base horizontally pivotally connected to the carriage and provided at its front end with ground working means, the weight of the machine being so distributed in respect to the carriage that the front end of the base normally tilts downwardly to bring the ground working means into engagement with the ground, a platform connected to and extending substantially horizontally and rearwardly from the rear end of the base, the platform providing a support normally above and in spaced relationship to the ground upon which the operator of the machine may ride to cause by his weight thereon the front end of the machine to be elevated, the platform being provided with wheels, the platform wheels having engagement with the ground when a rider is on the paltform, the base being provided with rearwardly extending handles adapted to be grasped by the operator of the machine, and the platform being pivotally mounted to permit it to be swung into a substantially vertical position at the rear of the machine, whereby the machine operator can walk at the rear of the machine with his hands in engagement with the handles.

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