May 13, 1958 C. F. BARRETT, JR 2,834,274

REVERSIBLE DISC PLOW

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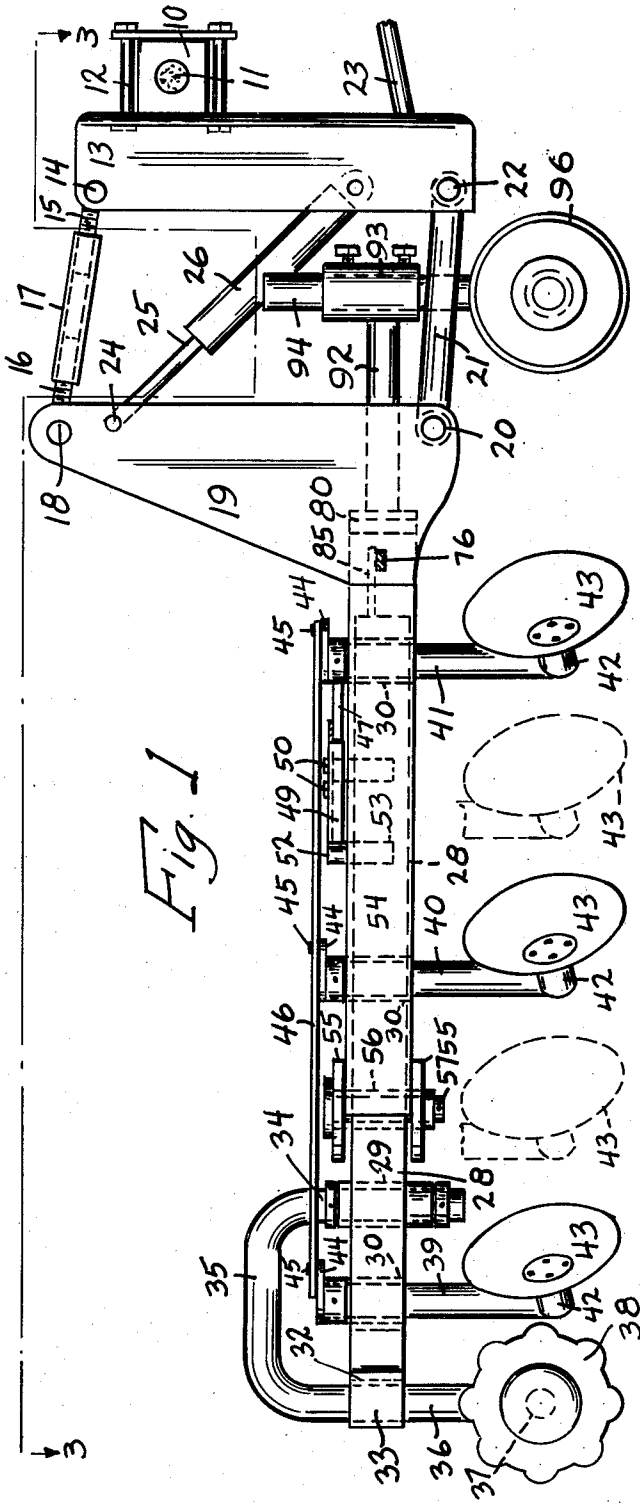


Fig. 1

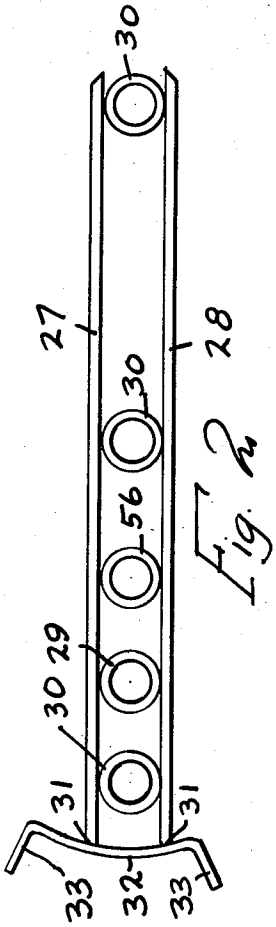


Fig. 2

INVENTOR.
Charles F. Barrett Jr.
BY
Samuel Slotky
ATTORNEY

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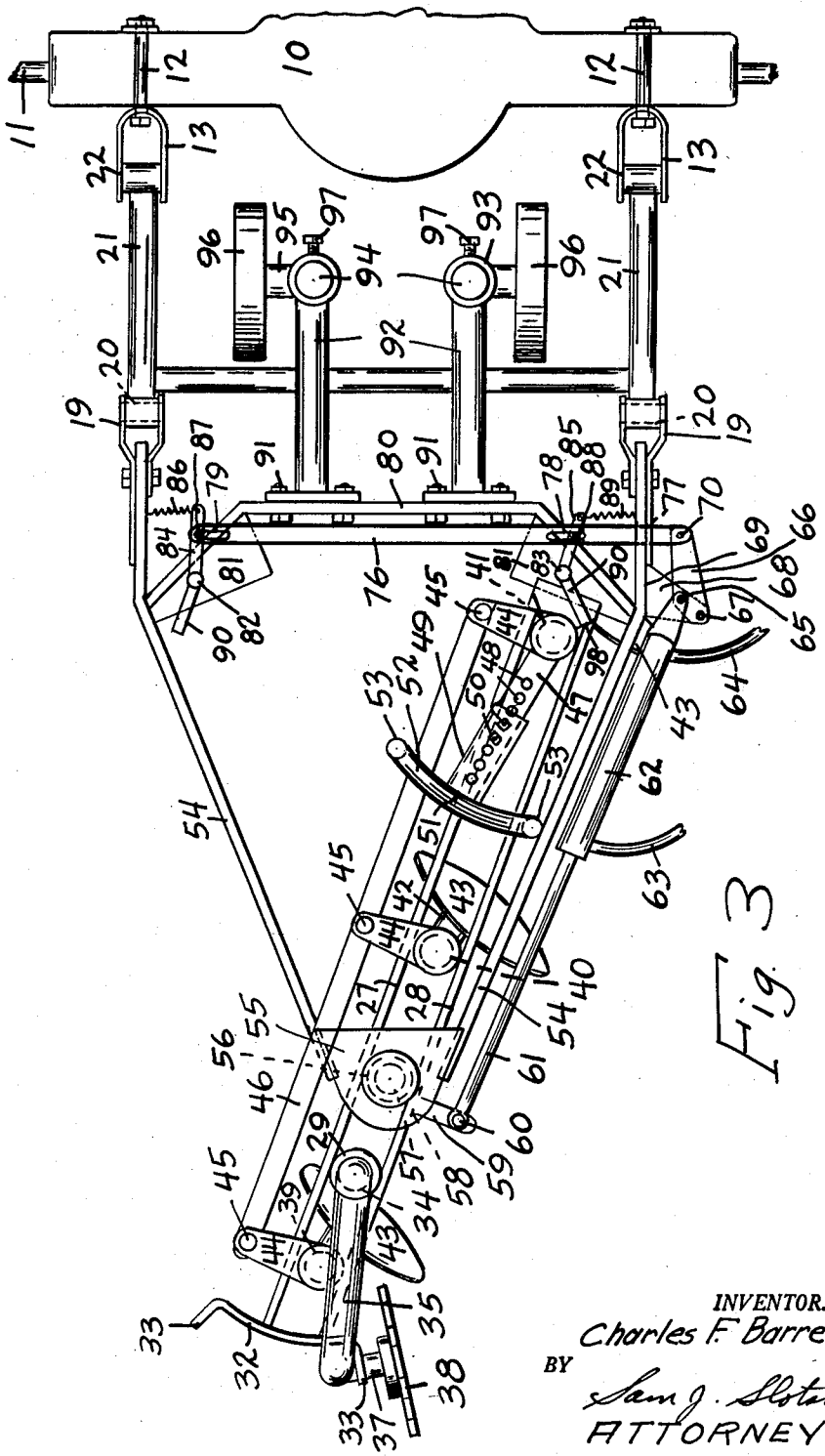


Fig. 3

INVENTOR.
Charles F. Barrett Jr.
BY
Sam J. Slotsky
ATTORNEY

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REVERSIBLE DISC PLOW

Charles F. Barrett, Jr., Selma, Calif.

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1 Claim. (Cl. 97—32)

My invention pertains to a disc plow.

An object of my invention is to provide a disc plow which is reversible, and wherein the disc plow can be reversed by use of the hydraulic means usually present in a tractor.

A further object of my invention is to provide a reversible disc plow having several discs, and which automatically reverses by means of certain elements so arranged as to also cause the disc plow to occupy the same relative position after being reversed.

A further object of my invention is to provide a reversible disc plow wherein the discs are automatically reversed to the correct pitch upon reversal of the plow.

A further object of my invention is to provide a two-way disc plow in which the pivot frame is located substantially in the same plane as the principal or main frame.

A further object of my invention is to provide a two-way disc plow in which the sides of the principal or main frame act as a stop for the pivot frame to thereby determine the degree of rotation of the pivot frame.

A further object of my invention is to provide an arrangement in which certain pivot frame latches are actuated by the hydraulically operated shifting ram.

A further object of my invention is to provide means whereby the angle of attack of the side draft control coulter is determined by locating the pivoting point of the coulter frame in front of the rear disc shank of the arrangement.

A further object of my invention is to provide certain wheels for providing a depth gauge arrangement, and which wheels are located to travel on unplowed ground and in front of the plow elements.

A further object of my invention is to provide means for adjusting the angle of attack of the discs by means of an auxiliary adjustable bar arrangement.

With these and other objects in view, my invention consists in the construction, arrangement, and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claim, and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of the reversible disc plow, and taken substantially along the lines 1—1 of Figure 3.

Figure 2 is a plan view of the pivoting frame alone, or when unassembled with the other portions of the plow, and

Figure 3 is a view of the arrangement taken substantially along the lines 3—3 of Figure 1.

I have used the character 10 to indicate the rear portions of a tractor, the character 11 indicating the shaft, and I have used the character 12 to indicate a pair of supporting members clamped to the tractor, which members are attached to the substantially U-shaped further members 13.

Pivoted at 14 to the members 13 are the threaded members 15 and 16 having a turnbuckle attachment 17 for

effecting angular positioning of the plow, the members 16 being pivoted at 18 to the further members 19.

Pivoted to the members 19 at 20 are the bars 21 which are pivoted at 22 to the members 13. The character 23 designates truss bars which can be attached to the member 13 and which pass to the tractor.

Attached at 24 are the further elements 25 and 26 which can be provided for further bracing means.

The swinging framework comprises a pair of spaced vertically positioned side members 27 and 28 between which are secured the cylindrical bearing members 29 and 30, and attached at 31 to the ends of the members 27 and 28 is a stop bracket 32 having the abutment ends 33.

Journalled in the member 29 is the vertically positioned portion 34 of the member 35 which extends into the further vertically positioned portion 36 which extends downwardly and terminates in the horizontal portion 37 upon which is journalled a coulter wheel 38. Also journalled in the various members 30 are the vertically positioned disc shanks 39, 40 and 41, to which are attached the substantially horizontal portions 42 and to which are journalled the plow discs 43. Figure 1 shows by dotted lines whereni additional journalling members 30 can be supplied if desired, using additional discs.

Secured at the upper ends of each of the shanks 39, 40 and 41 are the arms 44 which are pivotally connected at 45 to an equalizing bar 46 to provide uniform swinging motion of the discs.

Attached to the disc shank 41 is a bar 47 including a plurality of openings 48, to which bar is secured a further bar 49, these bars being secured by means of the nuts and bolts 50. The bar 49 is secured at 51 to a substantially arcuate further bar member 52 terminating in the downwardly projecting ends 53. Secured to the members 19 are further framework portions 54 attached to the plates 55. Also secured between the members 27 and 28 is a further journalling cylindrical member 56 (see Figure 2) in which is received the vertically positioned shaft member 57 which is secured to the plates 55, this arrangement thereby providing the pivoting point of the entire framework 27.

Attached to the member 28 as at 58 is a bracket 59 to which is attached at 60 the rod 61 of a hydraulic ram of the two-way type having the cylinder 62 in which cylinder is positioned a normally centrally positioned piston and communicating with the cylinder 62 are the pipes 63 and 64 which communicate to the hydraulic system of the tractor. Pivotally attached at 65 to the cylinder 62 is a bell crank 66 which is pivotally attached at 67 to the bracket 68, which is attached at 69 to the member 28. Pivotally attached to the bell crank member 66 at 70 is the laterally positioned bar 76 which passes through the frame member 54 at 77, this bar including a lower slot 78 and an upper slot 79, the bar 76 passing beneath a further brace member 80 suitably secured to the members 54.

A pair of brackets 81 are secured to the member 80 and pivoted thereto at 82 and 83 are the latches 84 and 85, and attached to the upper latch 84 is a spring 86 which is secured to the framework portions, the latch 84 including a pin 87 passing through the upper slot 79, the lower latch 85 including a pin 88 passing within the lower slot 78. Also secured to the latch 85 is a spring 89 which is secured to the framework. Each of the latches 84 and 85 include the inwardly projecting portions 90.

Secured to the member 80 are the brackets 91 to which are attached the forwardly extending members 92 terminating in the cylindrical members 93 in which are secured the vertical spindles 94 terminating in the portions 95 to which are journalled the wheels 96, and engaging

the members 93 are the studs 97 for locking the members 94 in selected position.

In describing the operation of my type of reversible disc plow, it will be noted that the turn-buckles 17 can be used to adjust the depth of the discs in relation to each other and by also adjustably positioning the adjustable support members 25 and 26 in a similar manner.

The side draft of the plow is controlled by the scalloped coulter 38, the angle of attack of which is determined by locating the pivoting point at 29 in front of the rear disc shank 39, and by means of the stop bracket 32 since the coulter 38 will stop in the same relative position while plowing in either direction as will be evident from the description, and due to the fact that the shank 36 will be limited by either portion 33 at either side of the swinging action. The angle of attack of the discs is determined by the bracket 52. It will be noted that the downwardly projecting portion 53 in either case strikes the side of the frame 54 when the pivoting frame 27 and 28 is swung to either side, thereby causing the forward disc shank 41 to rotate, which rotation is transferred to the other shanks 40 and 39 by means of the equalizing bar 46.

Each downwardly projecting bar 53 is locked between the sides of the main frame 54 and the pivoting frame 27 and 28 when the pivot frame is locked in final position by the latches 84 or 85, thus securing the angle of attack of the discs. The angle of attack is made greater or less by removing the bolts 50 from any of the openings 48 and moving the adjustable bar 49 toward the rear of the plow or toward the front of the plow and retightening in further openings 48, it being noted that this adjustment will thereby correspondingly cause a greater or lesser swinging action of the discs when the members 53 abut against the swinging frame.

Figure 3 shows the swinging frame in one position, the oil being forced through the pipe 64 into the cylinder 62, the frame already being swung on its axis or shaft 57, and with the rod 61 being extended, and with the coulter wheel being against the lower stop 33 as observed in Figure 3, and since the cylinder 62 is in a freely floating position, the bell crank thereby is pivoted to the position shown, with the rod being also as shown, and with the pin 88 being locked at the bottom of the slot 78, thereby causing the portion 90 of the latch 85 to engage one end 98 of the swinging frame portion 28, and thereby locking the swinging frame in this position so that the plowing operation can then proceed in this position.

Correspondingly, to reverse the plow, the oil is fed through the tube 63 which causes the rod 61 to travel toward the right as viewed in Figure 3, and at the same time swings the further end point 98 of the member 27 toward the upper position shown in Figure 3, with the portion 36 of the coulter wheel then abutting against the upper stop portion 33. During this action, and due to the fact that the stroke of the member 61 is shortened relatively to the swinging of the pivoting point 60, and since the cylinder 62 is floating, the combined effect will be to pull the bell crank 66 toward the left, as viewed in Figure 3, thereby forcing the rod 76 upwardly as viewed in Figure 3, which action rotates portion 90 of the latch to release framework portion 28, rotation of portion 90 being caused by engagement of pin 88 with slot 78. As frame 27 strikes portion 90 of upper latch 84, slot 79

allows latch 84 to rotate a few degrees, since bar 76 has already been moved upwardly, to allow the frame to pass to locked position. The tension springs 86 and 89 tend to hold the latches in locked position. In this manner the plow is reversed and locked in either position.

By means of the lock nuts 97 the wheels 96 can be adjustably positioned to desired height to correspondingly adjust the depth at which the plow is to operate. It will also be noted that the wheels 96 are also located in this construction to travel on unplowed ground and in front of the plow.

It will be obvious that the various bracing means 25, 26, etc. can be altered if desired, the essential principle being the same.

It will now be seen that I have provided the various advantages set forth in the objects of my invention with various other advantages being readily apparent.

Some changes may be made in the construction and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claim any modified forms of structure or use of mechanical equivalents which may be reasonably included within its scope.

I claim as my invention:

A reversible disc plow having a main framework, a swinging frame pivotally mounted in said main framework and lying substantially in the plane thereof, a plurality of discs mounted on said swinging frame, means for swinging said swinging frame laterally, means cooperant with the sides of said main framework to limit movement of said swinging frame, latches for securing said swinging frame in either position, a hydraulic ram for operating said latches, said ram also being adapted to swing said swinging frame, a draft control coulter wheel, a further swinging frame to which said coulter wheel is journalled, said further swinging frame being pivotally secured to said swinging frame at a point ahead of the rearmost of said discs, a pair of wheels secured to said main framework, means for adjustably positioning said wheels vertically, said wheels being positioned forwardly of the plow elements of said reversible disc plow, means for adjustably positioning the angle of attack of said discs comprising an adjustable bar attached to the vertical spindle of one of said discs, said adjustable bar including a further bar portion substantially at right angles thereto, said further bar portion having a pair of vertically positioned stop portions adapted to abut against said swinging frame and said main framework, a stop bracket attached at the termination of said swinging frame having stop portions for limiting movement of said coulter wheel, said latches being pivotally mounted on said main framework, a transverse bar for operating said latches, said transverse bar having slots therein, pins engaged in said slots, a bell crank attached to said transverse bar and to said hydraulic ram, said transverse bar operating either of said latches to provide holding means for the forward end of said swinging frame when in either swung position.

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