March 10, 1959 E. V. BRISCOE 2,876,564

SLOPER

Filed April 19, 1957 3 Sheets-Sheet 1

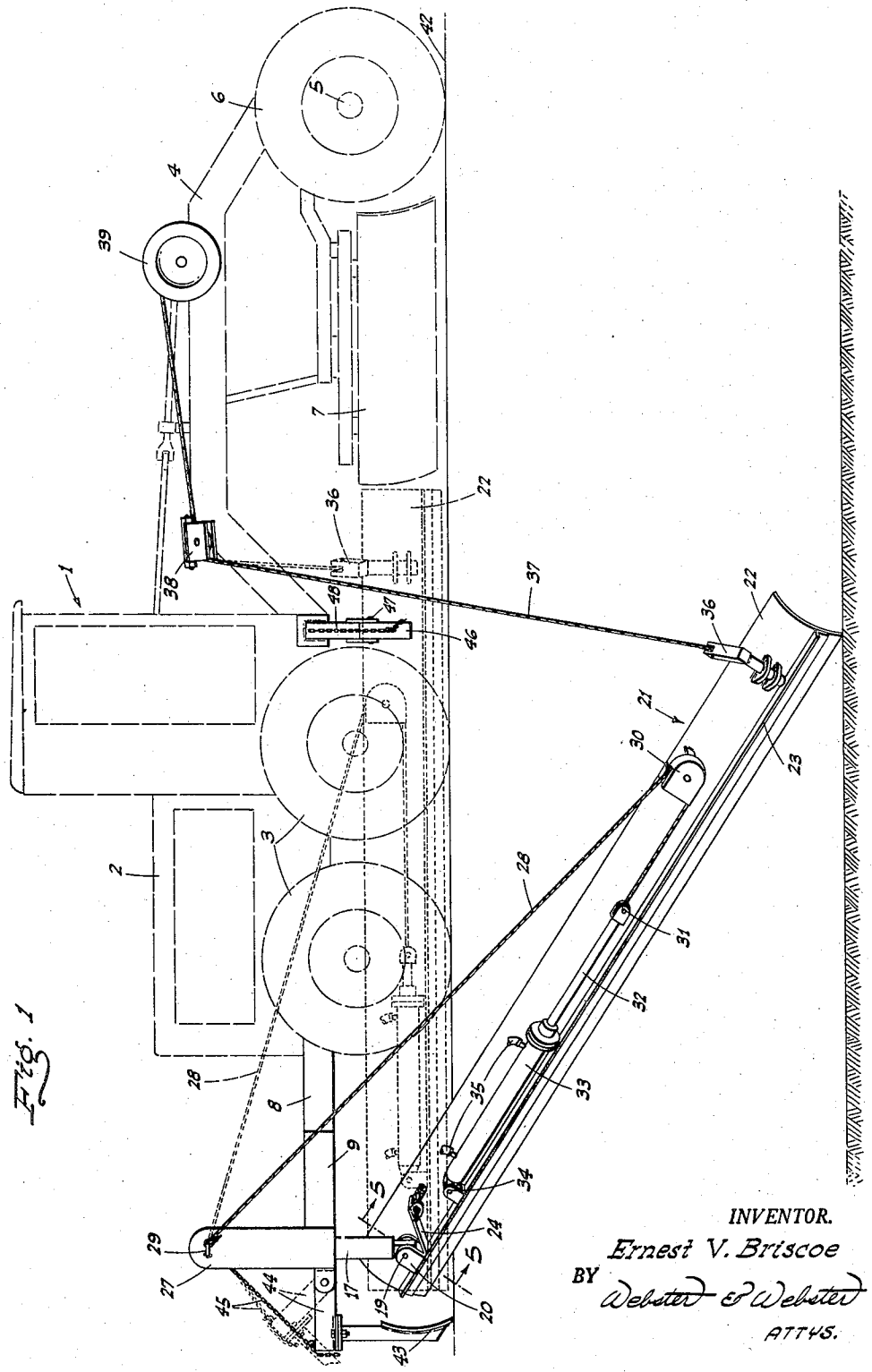

Fig. 1

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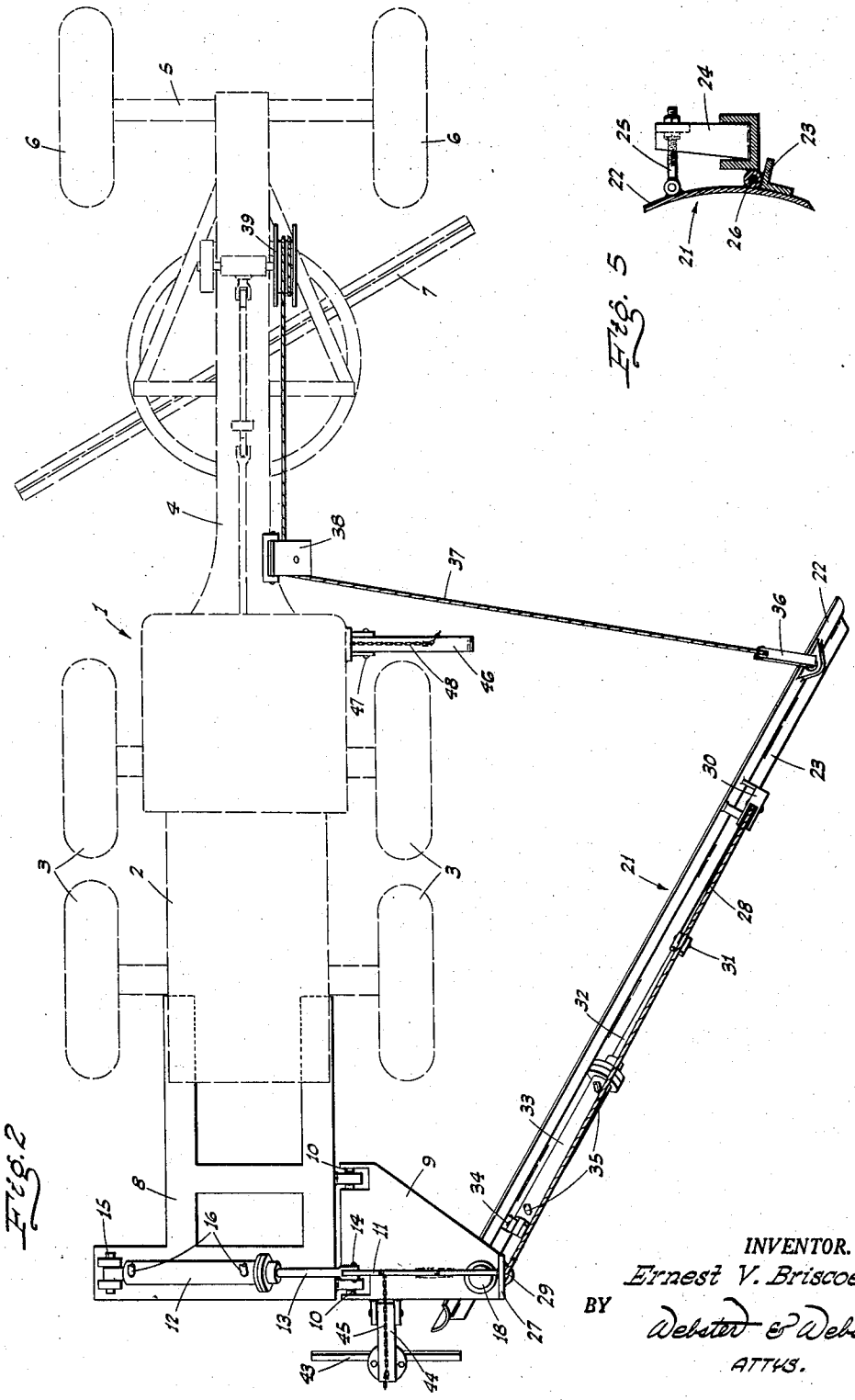

Fig. 2

Fig. 5

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Fig. 3

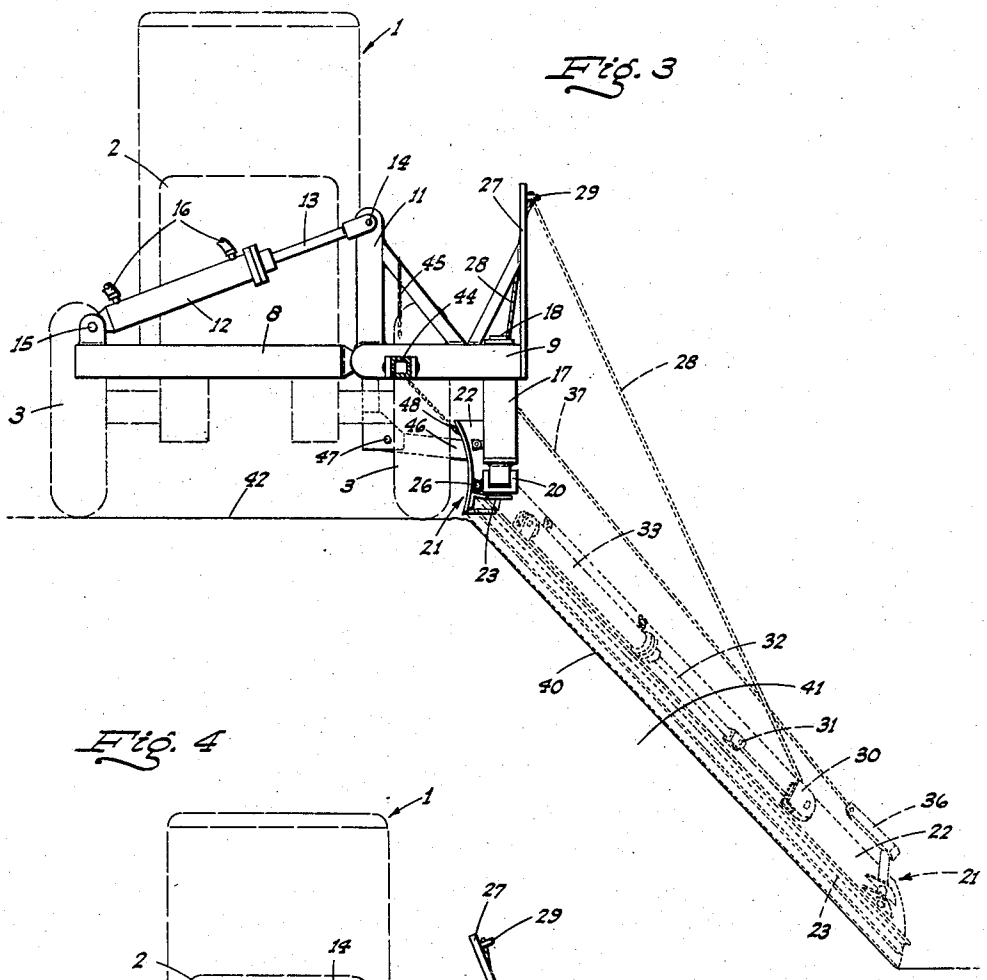
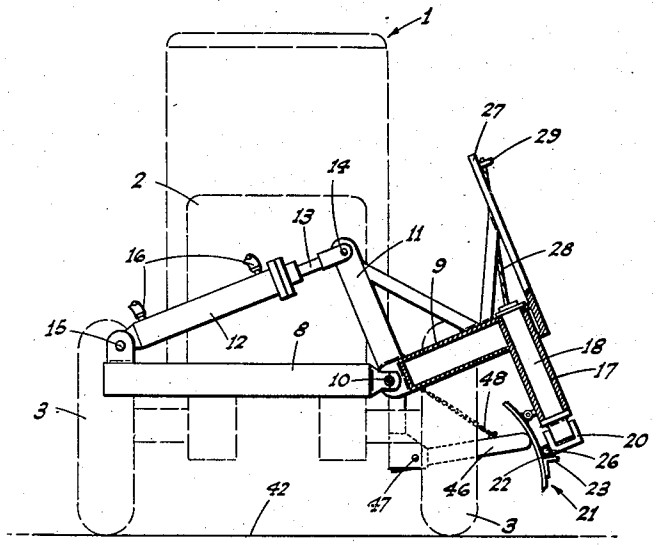


Fig. 4



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2 Claims. (Cl. 37—155)

This invention relates in general to tractor-mounted earth working implements, and in particular is directed to improvements in the implement shown in United States Patent No. 2,640,286, issued June 2, 1953, on Ditch Cleaner and Ridger.

This type of equipment is generally known in the trade as a tractor-mounted sloper, and the purpose of such a sloper is to clean and grade an inclined surface—such as the wall of a ditch bank—as the tractor moves forwardly thereabove and on an adjacent substantially level surface, such as the top of the bank.

A major object of the invention is to provide a novel adjustable mount for the elongated moldboard or blade unit included in the implement, and which blade unit extends—in use—at a forward and downward outward incline from the rear of the tractor; such mount being especially designed—but not limited—for use to attach the implement to a motor grader.

Another important object of the invention is to provide a sloper, as above, wherein such mount supports the blade unit in its working position; i. e., when in forwardly and downwardly, outwardly inclined working position, for selective and independent adjustment of said blade unit up or down, or laterally in or out, about a swivel at the rear end of the unit, or vertically at said rear end; all to the end that such blade unit may be set to exactly the correct position to properly function in connection with the cleaning and grading of an inclined surface, such as a ditch bank.

A further object of the invention is to provide a mount which permits the moldboard or blade unit to be swung to an inoperative or non-working position above ground, lengthwise of, and closely alongside, the tractor for transport from point to point.

It is also an object of the invention to provide a sloper which is designed for ready manufacture, and convenience of installation on a tractor.

An additional object of the invention is to provide a practical, reliable, and durable sloper.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a side elevation of the sloper as mounted on a motor grader; the moldboard or blade unit being shown in full lines in its working position, and in dotted lines as raised alongside the tractor but before final lifting for transport.

Fig. 2 is a top plan view of the sloper as in use.

Fig. 3 is a rear end elevation of the sloper showing, in dotted lines, the moldboard or blade unit in its working position, and, in full lines, occupying the same position as shown in dotted lines in Fig. 1.

Fig. 4 is a rear end elevation, partly in section, showing the moldboard as raised to its full transport position lengthwise of—and alongside—the tractor in ground clearance relation.

Fig. 5 is a fragmentary transverse cross section on line 5—5 of Fig. 1.

Referring now more particularly to the drawings, and to the characters of reference marked thereon, the sloper is here shown as attached to a motor grader, indicated generally at 1, and which earth working implement is of the type which includes a wheel-type tractor 2, whose drive wheels are indicated at 3; there being a rigid, forwardly projecting boom 4 supported, at the front, by an axle 5 carrying front wheels 6. A transverse grader blade 7 is adjustably suspended beneath the boom 4 in the usual manner.

The sloper, to which the present invention is directed, comprises a horizontal mounting platform 8 which is fixed to—and projects a distance rearwardly from—the tractor 2; such platform being secured to said tractor by any suitable means, such as bolting.

On one side of the mounting platform 8, rearwardly of the adjacent wheel 3, there is a laterally outwardly projecting attachment frame 9 pivoted, at its inner end, as at 10, to said side of the platform 8 at points spaced lengthwise of the tractor.

As so secured to the platform 8 the attachment frame 9 is swingable up and down in a transverse vertical plane, such swinging motion being accomplished by the following means:

At its inner end the laterally outwardly projecting attachment frame 9 is fitted with a rigid upstanding post 11, and a double-acting power cylinder 12 extends transversely above the mounting platform 8 inwardly of the post 11; such power cylinder 12 including a piston rod 13 which projects toward the upper end of said post 11, being pivoted to the latter, as at 14. From the upper end of the post 11 the power cylinder 12 extends at a downward incline, and at the end opposite said post is pivoted, as at 15, to said platform 8 adjacent the side remote from the attachment frame 9.

The power cylinder 12 is included in a valve controlled, fluid pressure conduit system, indicated only in part at 16, but which is generally conventional. By reversible operation of the cylinder 12 the attachment frame 9 can be swung in a transverse vertical plane; i. e., up and down. See Figs. 3 and 4.

At its outer end the attachment frame 9 is provided with a fixed dependent sleeve 17 disposed at right angles to said frame and extending a substantial distance therebelow; such sleeve carrying—in rotatable but axially fixed relation—a spindle 18. The lower end of the spindle 18 projects out of the sleeve 17 and is there pivotally connected, as at 19, in a clevis 20 rigid with the rear end portion and on the outside of an elongated moldboard or blade unit 21.

The blade unit 21 includes an elongated blade 22 hinged at the back side to a full-length angle iron 23, and on which angle iron the clevis 20 is secured. An arm 24 upstands from the base of the clevis 20, and an adjustable tie bolt 25 is connected between the upper end of the arm 24 and the blade 22, whereby to set the working angle of said blade relative to the longitudinal angle iron 23. The hinge connection between the blade 22 and angle iron 23 is indicated at 26.

A post 27 is fixed in connection with, and upstands from, the outer end of the laterally outwardly projecting attachment frame 9, and a lift cable 28 is anchored at one end, as at 29, to the upper end of said post 27. From the post 27 the lift cable 28 extends forwardly and thence about a direction-reversing sheave 30 mounted on the back side of the blade 22 adjacent but short of its forward end. From the sheave 30 the cable 28 runs rearwardly to attachment, as at 31, with the forward or outer end of the piston rod 32 of a double-acting power cylinder 33 which lies lengthwise of, and extends along,

the back side of the blade 22; such cylinder at its rear end being pivotally connected, at at 34, in connection with the angle iron 23 ahead of the clevis 20. The power cylinder 33 is reversibly actuated through the medium of a valve controlled fluid pressure conduit system, indicated in part at 35.

Likewise on the back side of the blade 22, and ahead of the sheave 30, there is attached a swivelly mounted hanger arm 36, and a tension or pull cable 37 is connected at one end to said hanger arm and thence extends upwardly and inwardly to a sheave 38 on the boom 4 adjacent the tractor 2. The cable 37, after turning about the sheave 38, runs forwardly along the boom 4 and connects to a power driven winch, indicated generally at 39.

In use of the above described sloper the laterally outwardly projecting attachment frame 9 is set to a selected position by the power cylinder 12, and then the tension cable 37 is paid out to permit the elongated moldboard or blade unit 31 to assume a working position at a forward and downward outward incline from the rear; the spindle 18 turning in the sleeve 17 and the lower end of said spindle pivoting in the clevis 20.

Also, the power cylinder 33 is operated so that the lift cable 28 works to adjust said blade unit up or down, as desired.

With the moldboard or blade unit thus set, and with said unit resting—for example—on the wall 40 of a ditch bank 41 on the top 42 of which the motor grader is traveling, said blade unit functions to positively and accurately cut, clean, and grade such wall, with any excess material traveling upwardly on the blade 22 and delivering from the rear end of the latter onto the top 42 of the bank.

The material as so delivered, in a windrow, on the top 42 of the bank 41 is spread by a spoil wing 43 depending from a swing mount 44 adjustably maintained in position by a tie chain 45. The swing mount 44 projects rearwardly from the frame 9, while the chain 45 extends upwardly from the rear end of the swing mount 44 to an elevated anchor point rigid with the post 11.

When it is desired to swing the elongated mold board or blade unit to a transport position disposed longitudinally along the side of the tractor 2 and above ground, the cables 28 and 37, particularly the latter, are shortened in their effective length until said blade unit 21 assumes the position shown in dotted lines in Fig. 1, and in full lines in Fig. 3. The blade unit 21 is then disposed parallel to the ground, being subsequently lifted—while remaining parallel—by further shortening of the cables 28 and 37 and by swinging the frame 9 upwardly by the power cylinder 12, to the position shown in Fig. 4. The lift cables 28 and 37 are of course controlled by selective operation of the power cylinder 31 and the winch 39, respectively.

When the blade unit 21 is disposed in its transport position it is maintained in clearance relation to the near wheels 3 by a stand-off bar 46 pivoted, as at 47, to the adjacent side of the tractor 2, and maintained in an outwardly projecting position by a suspension chain 48; the outer end of the stand-off bar 46 then being against the face of the blade 22 (see Fig. 4).

From the foregoing description it will be readily seen that there has been produced such a device as will substantially fulfill the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. A tractor-mounted sloper comprising an attachment frame mounted on and projecting laterally out from the tractor at the rear, an elongated blade unit adapted in use to extend forwardly and downwardly at an outward incline from adjacent the attachment frame, means pivotally connecting the unit at its rear end to the attachment frame under the same for swinging movement in a vertical plane, and means connected between the blade unit and said frame to so swing the same; the last named means comprising, with an upstanding post on the attachment frame at its laterally outer side, a cable secured on and extending forwardly and downwardly from the post, a sheave fixed on the back side of the blade unit intermediate its ends, the cable passing about the sheave from above and then extending rearwardly along the blade unit, and a hydraulic ram extending lengthwise of the blade unit and secured on the back side thereof and connected to the rear end of the cable.

2. A tractor-mounted sloper comprising an attachment frame mounted on and projecting laterally out from the tractor at the rear, an elongated blade unit adapted in use to extend forwardly and downwardly at an outward incline from adjacent the attachment frame, means swivelly mounting the blade unit at its rear end on the attachment frame for vertical swinging movement and independent lateral swinging movement about such end whereby the blade unit may be raised when not in use to a substantially horizontal position parallel to and alongside the tractor, means between the tractor and blade unit to pull the blade unit laterally inward, and a stand-off bar mounted on the tractor in position to contact the blade unit intermediate its ends when raised and pulled laterally inward to such horizontal and parallel position.

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