Feb. 9, 1954 E. V. BRISCOE 2,668,376

LISTER UNIT FOR DITCHERS

Filed June 24, 1950 2 Sheets-Sheet 1

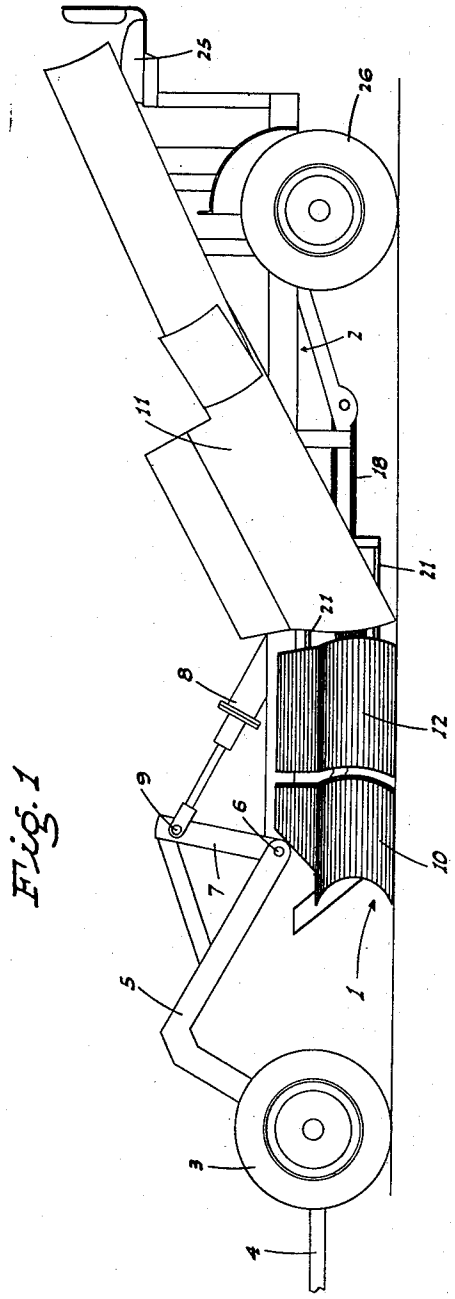


Fig. 1

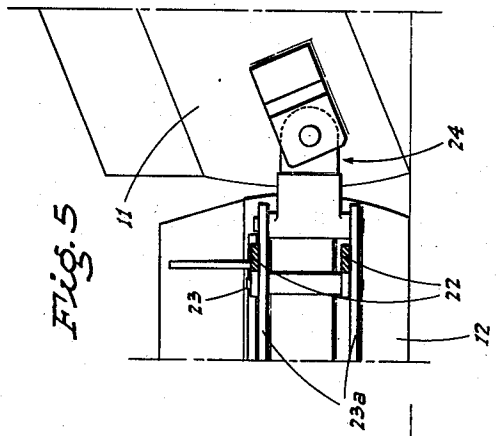


Fig. 5

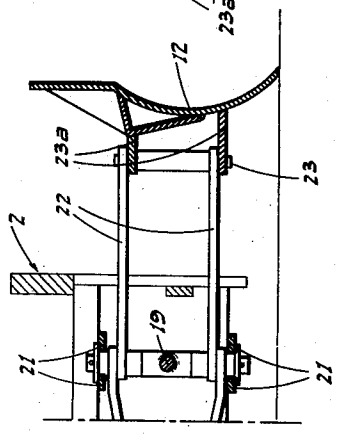


Fig. 4

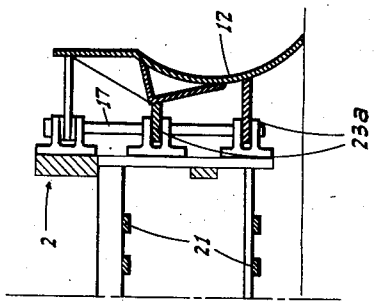


Fig. 3

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2 Sheets-Sheet 2

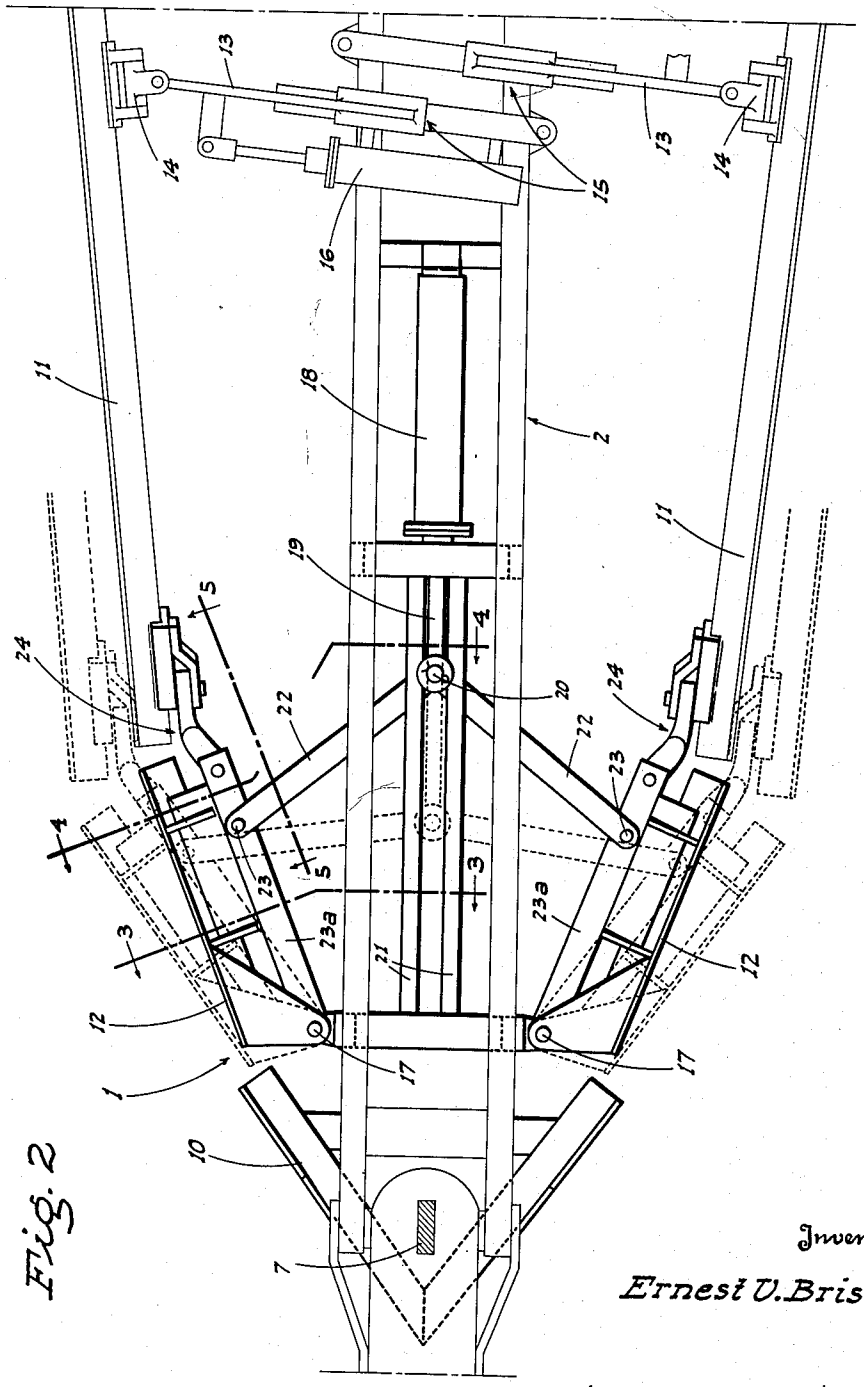


Fig. 2

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LISTER UNIT FOR DITCHERS

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Application June 24, 1950, Serial No. 170,185

1 Claim. (Cl. 37—98)

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This invention relates in general to improvements in a tractor-drawn ditch digger and cleaner which includes upwardly and rearwardly inclined, divergent, main scraper blades which trail a centrally disposed V shaped or lister plow.

A major object of the invention is to provide laterally adjustable extension blades intermediate the rear ends of the lister plow and corresponding forward ends of the main scraper blades, whereby earth flowing from the sides of the lister plow is caused to flow directly into the path of said forward ends of the main scraper blades. In this manner, spillage in the ditch of scraped earth is minimized.

Another important object of the invention is to mount the extension blades and forward ends of the corresponding main scraper blades for lateral adjustment in unison; a novel power actuated mechanism being provided to accomplish such adjustment.

It is also an object of the invention to provide a lister unit which is designed for heavy duty use, being relatively simple but rugged in structure.

Still another object of the invention is to provide a practical and reliable lister unit for ditchers, and one which will be exceedingly effective for the purpose for which it is designed.

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 claim.

In the drawings:

Fig. 1 is a side elevation, somewhat diagrammatic, of a ditch digging and cleaning implement; such implement being fitted with the lister unit.

Fig. 2 is a top plan view of the same, with certain parts omitted and certain parts cut away.

Fig. 3 is a fragmentary transverse section on line 3—3 of Fig. 2.

Fig. 4 is a fragmentary transverse section on line 4—4 of Fig. 2.

Fig. 5 is a fragmentary transverse section on line 5—5 of Fig. 2.

Referring now more particularly to the characters of reference on the drawings, the lister unit is indicated generally at 1, and is shown as mounted in connection with a ditch digging and cleaning implement which includes a rigid, elongated frame 2. The main frame 2 is vertically adjustably supported, at the front end, from a front wheel truck 3 having a forwardly projecting drawbar 4 adapted to couple to the tractor. The front wheel truck 3 is mounted on

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the forward end of a gooseneck 5 pivoted, as at 6, to the front end of the main frame 2 for relative vertical articulation. A post structure 7 upstands from the rear end of the gooseneck 5 in rigid relation and forming therewith, in effect, a bellcrank lever. A power cylinder 8 is secured to the main frame 2 and extends at a forward and upward incline to pivotal connection, as at 9, with the upper end of the post structure 7.

Expansion or contraction of the power cylinder 8, working through the bellcrank lever comprised of the post structure 7 and gooseneck 5, causes the main frame 2 to adjust upwardly or downwardly, respectively, at its forward end.

A V-shaped or lister plow 10 is suspended in rigid relation from and below the forward end of the main frame 2, and rearwardly of said lister plow 10 the implement includes, on opposite sides of said main frame, rearwardly and upwardly inclined main scraper blades 11 which diverge to the rear, as shown. The rear ends of opposite sides of the lister plow 10 and corresponding forward ends of the main scraper blades 11 are spaced apart some distance, and rearwardly divergent extension blades 12 are disposed in said spaces, being mounted in the manner, and functioning for the purpose, hereinafter described.

At their rear ends the main scraper blades 11 are supported by laterally projecting thrust arms 13 secured at their outer ends by double-axis connections 14 to the blades; the inner ends of the thrust arms 13 being affixed to slide mounts 15 on the main frame 2.

The thrust arms 12 and 13 are each adapted to be adjusted inwardly or outwardly by a power cylinder 16, only one of which is shown in Fig. 2.

The rearwardly divergent extension blades 12, which extend between adjacent corresponding ends of the lister plow 10 and main scraper blades 11, are mounted as follows:

At their forward ends, and adjacent the rear ends of opposite sides of the lister plow 10, the extension blades 12 are secured in connection with the main frame by pivot pins 17; the arrangement being such that said extension blades 12 are laterally adjustable, as for example between the full line and dotted line positions of Fig. 2.

However, with said extension blades 12 pivoted, as at 17, such adjustment motion does not materially alter the relative positions of the forward ends of said extension blades with respect to the corresponding rear ends of the lister plow 10.

The following power actuated mechanism is

employed to accomplish simultaneous lateral adjustment of the extension blades 12.

A power cylinder 18 is mounted in the main frame 2 lengthwise thereof, and said power cylinder includes a forwardly projecting piston rod 19, which is connected, at its forward end, to a vertical pin 20. The vertical pin 20 rides, in guided relation, at opposite end portions, between vertically spaced pairs of transversely spaced, longitudinal guides 21 mounted in the main frame 2.

Pairs of vertically spaced toggle links 22 are journaled at their inner ends in connection with the vertical pin 20 and extend therefrom in forwardly diverging relation, each pair of said toggle links 22 being secured by a vertical pivot pin 23 to longitudinal attachment plates 23a on the back side of the corresponding extension blade 12. Thus, when the power cylinder 18 is contracted, the toggle links 22 pull the extension blades 12 laterally inwardly, whereas when the power cylinder 18 is expanded said toggle links thrust the extension blades 12 laterally outwardly.

At their rear ends the extension blades 12 are each connected to the adjacent forward end of the corresponding main scraper blade 11 by means of a double-axis connection 24, and with such connections said forward ends of the main scraper blades 11 adjust laterally in unison with the extension blades 12. The purpose of such lateral adjustment is to alter the effective width of the implement; i. e. to dig or clean ditches having different bottom widths.

The power cylinders 8, 16, and 18 are adapted to be selectively and independently actuated through the medium of a valve regulated, fluid pressure supply system, the disclosure of which is here omitted. However, such valve regulated, fluid pressure supply system is under the control of an operator who rides the implement, at the rear thereof, on an operator's seat 25; the implement being supported at said end by transversely spaced rear wheels 26.

When the implement is in use to dig or clean a ditch, and with the implement being advanced by a tractor, the lister plow 10 works the central bottom portion of the ditch and throws the earth to opposite sides, whence said earth is engaged and further laterally diverted by the extension blades 12. From the extension blades 12 the earth flows directly into the path of the forward ends of the main scraper blades 11, being carried up the ditch bank by the latter blades and deposited atop the bank as spoil material.

The lister unit 1, including the extension blades 12, functions effectively to deliver the lister cut earth to the main scraper blades 11, with a minimum of spillage, and in any position of adjustment of the extension blades 12 and scraper blades 11.

The lister unit thus provides a very practical and reliable improvement in a ditch digging and cleaning implement of the type described.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills 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 therefrom may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

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

In a ditch digger having a central longitudinal main frame, a lister plow fixed at the forward end of the frame, and main side blades supported intermediate their ends from the frame and terminating at their forward ends rearwardly of the plow; laterally adjustable extension blades disposed in the gap between the lister plow and main blades, vertical hinge means between the frame and extension blades at the forward end of the latter, hinge connection means between the main and extension blades, and means to swing the extension blades in and out and comprising a longitudinal ram mounted on the frame, vertically spaced longitudinal guide units on the frame beyond the ram, the latter being in a horizontal plane substantially centrally between the guide units, a vertical pin movable between the guides and engaged by the ram, and vertically spaced pairs of links disposed in vertical planes between the guide units connected to the pin and diverging thence to vertically spaced connections with the extension blades.

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