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R. G. LE TOURNEAU

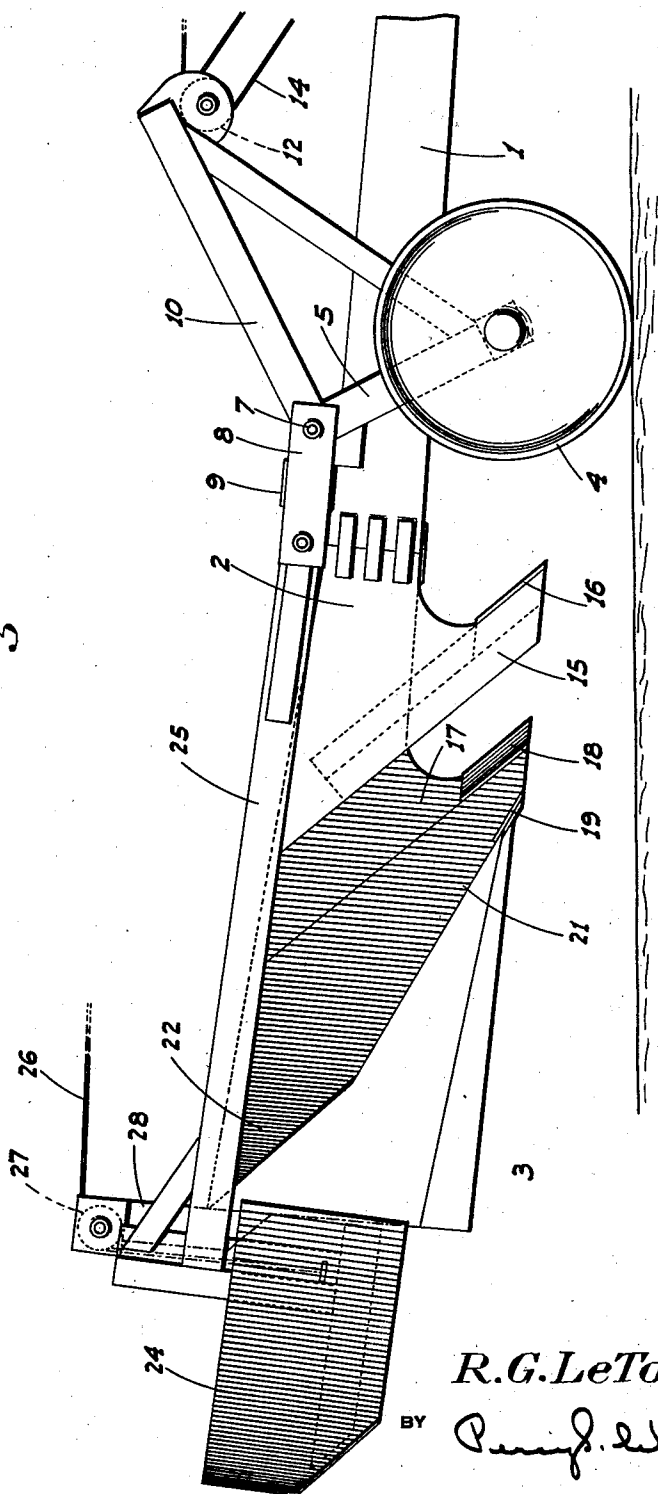
2,018,138

DITCHING PLOW

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Fig. 1



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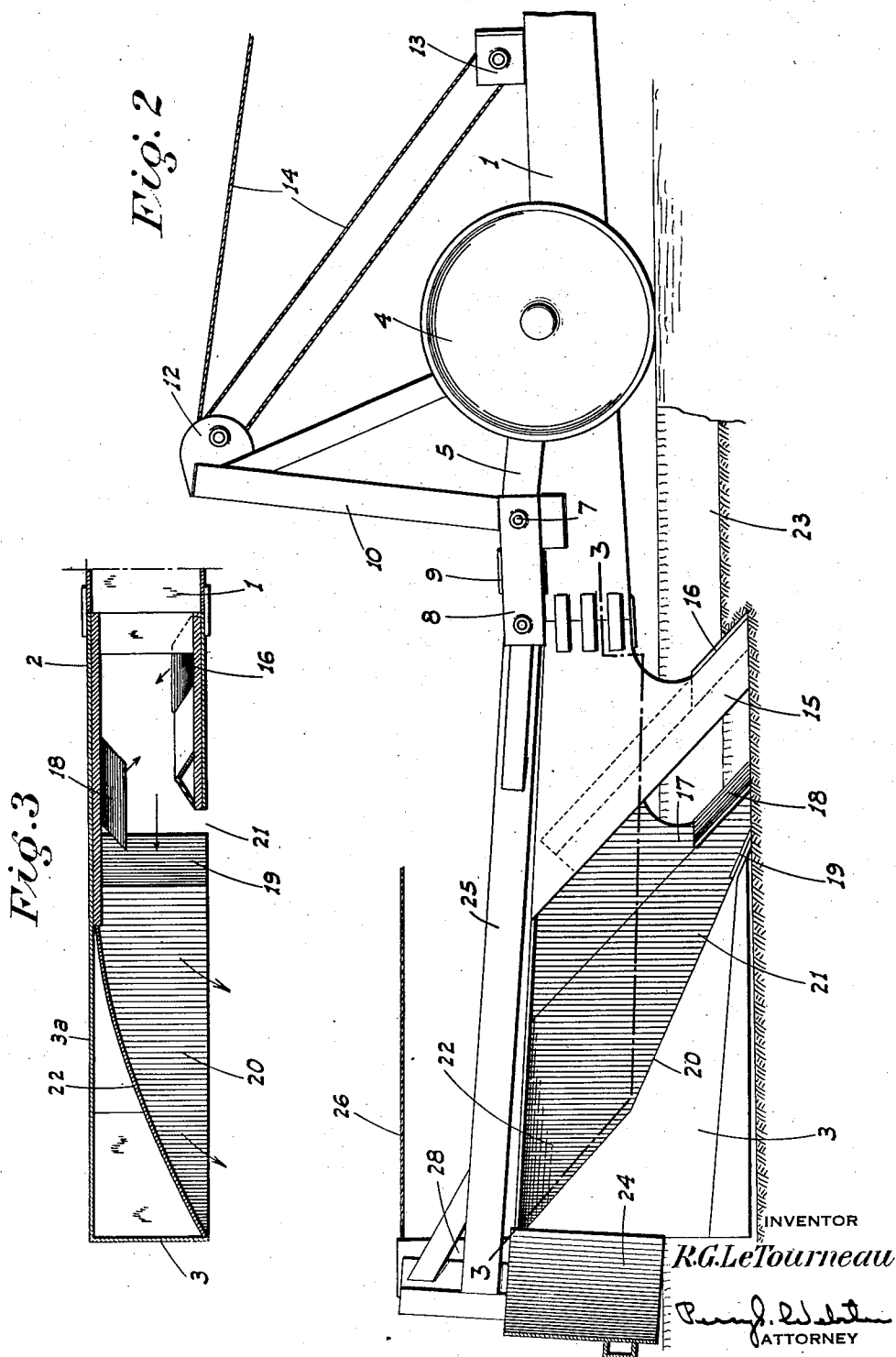
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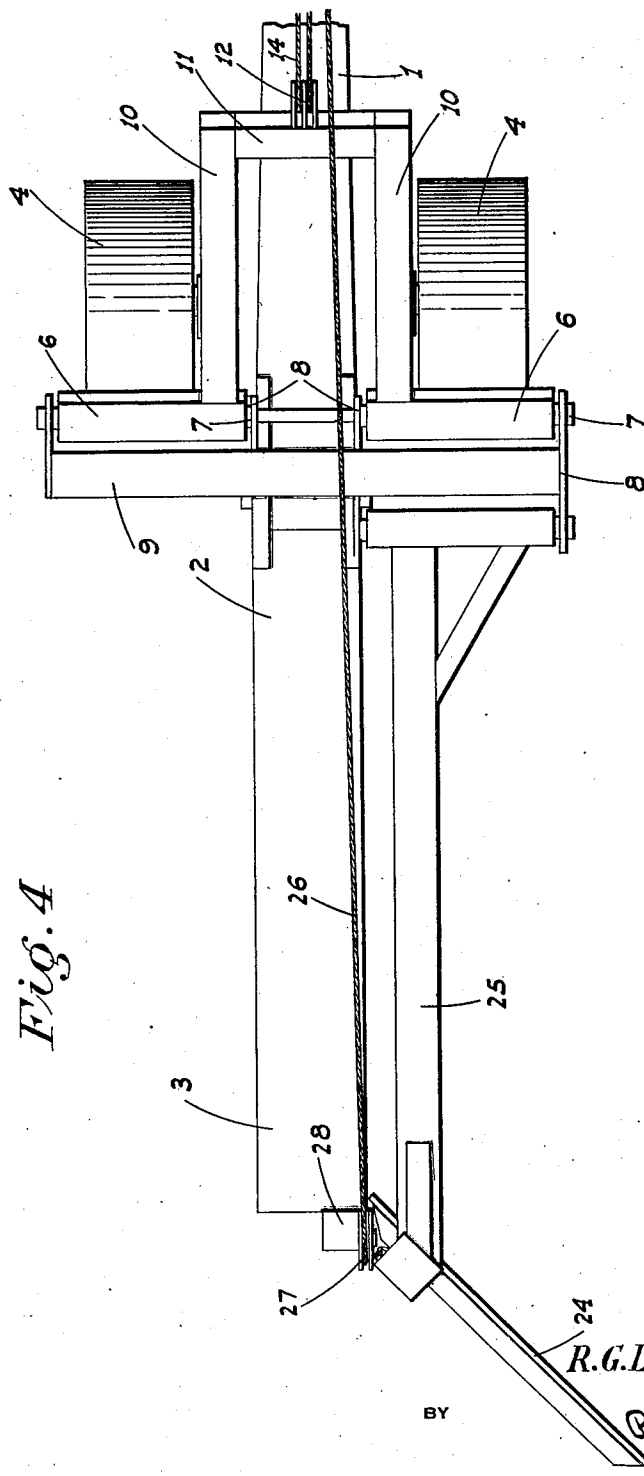
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DITCHING PLOW

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3 Claims. (Cl. 37—98)

This invention relates to plows and particularly to one for digging relatively narrow ditches such as are used for laying pipe lines.

The principal object of my invention is to provide an implement of this character having means to separately cut the sides and bottom of the ditch and arranged so that the walls of the ditch as they are cut will be kept in a smooth condition and prevented from immediately crumbling or caving in. The plow is therefore especially suitable and has been particularly designed for use in relatively dry or crumbly dirt, which renders it impossible for the ordinary ditching plow to successfully leave a clean ditch behind.

A further object of my invention is to construct the plow so that without the use of any relatively moving parts, all the dirt as it is cut or dug is raised to the surface of the ditch and deposited on the ground to one side of the ditch. By means of this simple yet efficient arrangement there is practically no wear on any part other than the edges of the cutting blades, since there are no bearings or similar members which will become abraded by dirt or which require lubrication to keep them functioning.

These objects I accomplish 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 similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of the plow in a transporting position.

Figure 2 is a similar view of the plow in a digging position.

Figure 3 is a fragmentary horizontal section on the line 3—3 of Figure 2.

Figure 4 is a top plan view of the plow.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes a rigid hollow tongue adapted at its forward end for supporting connection to the draw bar of a tractor. At the rear end of the tongue a hollow plow beam 2 extends as a rigid continuation thereof, said beam being formed with a rearward extension 3 of rectangular form in cross section and which depends to a bottom termination some distance below the bottom level of the beam 2 and the tongue.

The tongue is supported adjacent its rear end by transversely spaced wheels 4. These wheels are mounted in connection with radial arms 5 disposed to the sides of the tongue inwardly of the wheels and projecting from transverse beams 6 above the tongue. These beams are pivoted at

their ends as at 7 in bearing plates 8 mounted on the tongue and at the ends of a transverse beam 9 rigid with the tongue. Other radial arms 10 in the longitudinal plane of the arms 5 and rigid therewith extend upwardly from the beams 6 and are connected at their outer ends by a cross beam 11 overhanging the tongue. A sheave block 12 is mounted on said cross beam, while one sheave block 13 is fixed on the tongue ahead of the sheave 12. A cable 14 projects rearwardly from a suitable power unit on the tractor and extends about said sheaves while being anchored in connection with either one of the same, (this being immaterial), so that a pull on the cable causes the arms 10 to be pulled forwardly and downwardly. This relatively lowers the arms 5 and the wheels mounted thereon and consequently raises the tongue and the plow beam projecting therefrom.

A standard 15 is formed on one side of the plow beam adjacent its forward end, said standard being vertical and smooth on its outer surface and extending down to a bottom level adjacent that of the rear extension 3 of said beam. A blade 16 is mounted on said standard, this blade having a rearward and upward slope in a longitudinal direction, as well as an inward and rearward slope in a transverse direction. A short distance rearwardly of the standard 15, another similar standard 17 depends from the plow beam on the opposite side thereof, the rear edge of which standard throughout its length joins the corresponding side wall 3a of the extension 3. A blade 18 is mounted on the standard 17 at the same level as the blade 16 and with a similar longitudinal slant and being also set with an inward and rearward slope. In other words, these two blades are disposed so as to cut the side walls of the ditch and throw the cut dirt inwardly toward the central area of the ditch.

Extending transversely of the beam extension rearwardly of the blade 18 and for the full width between the side walls of said extension and the opposite edges of the blades 16 and 18 is a straight blade 19 having an upward slope to the rear at an acute angle less than that of the blades 16 and 18. This blade of course engages the bottom of the ditch and cuts the same straight across from side to side. Said blade 19 is disposed at the forward end of a similarly sloping floor 20 which extends at full width and length of the extension to the upper rear end of the same. The extension is open on the side of the standard 15 from the rear edge of the same to and extends along the adjacent edge of the floor, so as to provide a dirt discharge opening 21. Said extension however on

the opposite side is completely closed by a deflecting wall 22.

This wall cuts across the floor and extends the full height of the opening and from the rear edge of the standard 17 to the upper corner of the floor at the opening. Said wall preferably has a longitudinal concave curvature as shown in Figure 3 as well as a transverse concave curvature in the direction of the top wall of the extension 3 and the opening 21.

When the wheels are set so that the plow blades cut and depend into a ditch 23 therefore, the dirt on one side will be cut straight down and turned inwardly by the blade 16, while the dirt on the other side is similarly cut and turned inwardly by the blade 18. The blade 19 then cuts across the bottom of the ditch for its full width and not only cuts the dirt intermediate the path of action of the side blades but gathers up all the cut and loose dirt and moves the same up the floor 20. As the dirt is thus moved it is deflected toward the open side of the floor by the wall 22 and is delivered onto the ground to the side of the ditch. Even though a portion of the opening 21 is below the level of the ground the dirt cannot fall through this portion of the opening and back into the ditch, on account of the fact that the floor 20 extends to the side of the ditch, which forms a closure for the portion of the opening which is below ground level irrespective of the depth of the ditch. It is of course to be understood that the vertical height of the extension and consequently the length and height of the opening are greater than the depth of any ditch to be dug so that a certain portion of the opening is always exposed above ground for the discharge of the dirt. The outer surfaces of the plow standards as well as the walls of the extensions 3 are straight and smooth and lie in the same longitudinal planes, thus preventing the walls of the ditch from caving in as the ditch is being dug.

To move the dirt away from the bank of the ditch as it is deposited on the ground from the ditch opening, so as to prevent the dirt from possibly dropping back into the ditch after the plow has passed by, I provide a vertical deflecting plate 24. This plate extends with an outward and rearward slope from the rear end of the extension 3 and the discharge opening 21. Said plate is supported by a beam 25 which extends from above the plate rearwardly alongside the plow structure to a pivotal connection with the adjacent bracket plates 8 ahead of the beam 9. Vertical adjustment of said plate 24, to control the level of the same relative to that of the plow structure is effected by means of a cable 26 extending from the power unit on the tractor. This cable is connected to said plate behind the same adjacent its forward corner and toward the bottom and passes over a pulley 27 mounted

on a post 28 upstanding from and rigid with the adjacent corner of the extension 3. In this manner the plate may be held at ground level or raised clear of the ground when the structure is in a transporting position, as shown in Figure 1.

From the foregoing description it will be readily seen that I have 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 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 my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. A ditching plow comprising a centrally disposed plow beam, transversely spaced parallel walls forming the sides of the beam, and depending therefrom to the bottom and determining the width of the ditch, vertically extending cutters mounted on said walls at their forward end to cut the sides of the ditch, a bottom cutter extending between the walls rearwardly of the side cutters and a floor extending rearwardly and upwardly from the bottom cutter for the full width between the walls; one wall only having an opening extending upwardly from the floor, the bottom of the opening following and being on a level with the floor.

2. A ditching plow comprising a tongue-beam, a plow structure rigid with and depending from the rear end of the tongue, said structure including dirt cutting means and means to elevate the cut dirt and deposit the same on the ground to one side of the ditch, a deflector blade to engage the deposited dirt and shift the same laterally and away from the ditch, a beam rigid with the top of the blade and extending forwardly to one side of the plow structure, a pivotal connection between the beam and the tongue, and means between the blade and plow structure at the rear end of the latter to raise and lower the blade.

3. A ditching plow comprising vertical side walls spaced apart and determining the width of the ditch, blades to cut the sides of the ditch mounted on the walls at their forward end, with their cutting edges parallel to the walls, said blades having a longitudinal upward slope to the rear and being disposed in longitudinally staggered and downwardly converging relation transversely whereby to turn the cut dirt inwardly of the walls, means to engage and cut the bottom of the ditch, and means between the walls to elevate all the cut dirt and discharge the same above ground to one side of the ditch.

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