April 22 , 1924. 1,491,168

E. PRENDERGAST

DITCHING MACHINE

Filed Dec. 3, 1921 2 Sheets-Sheet 1

FIG. 1

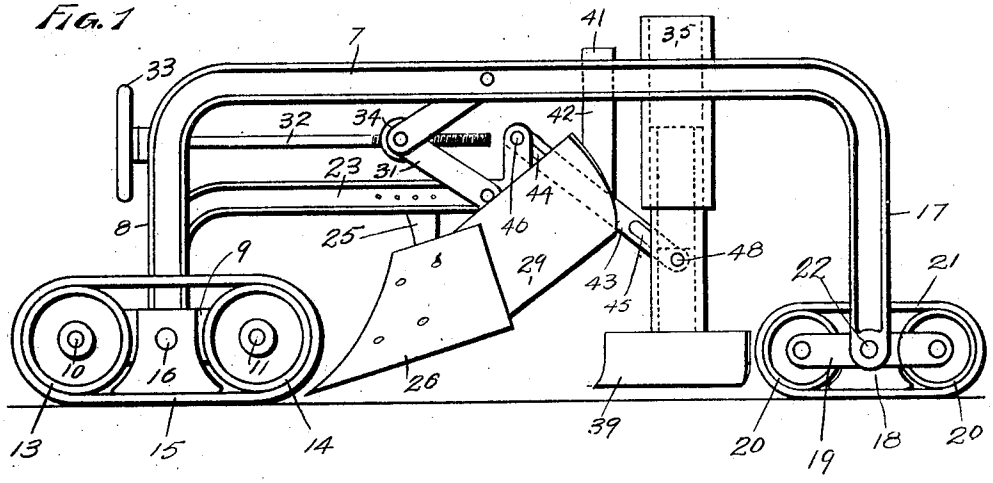
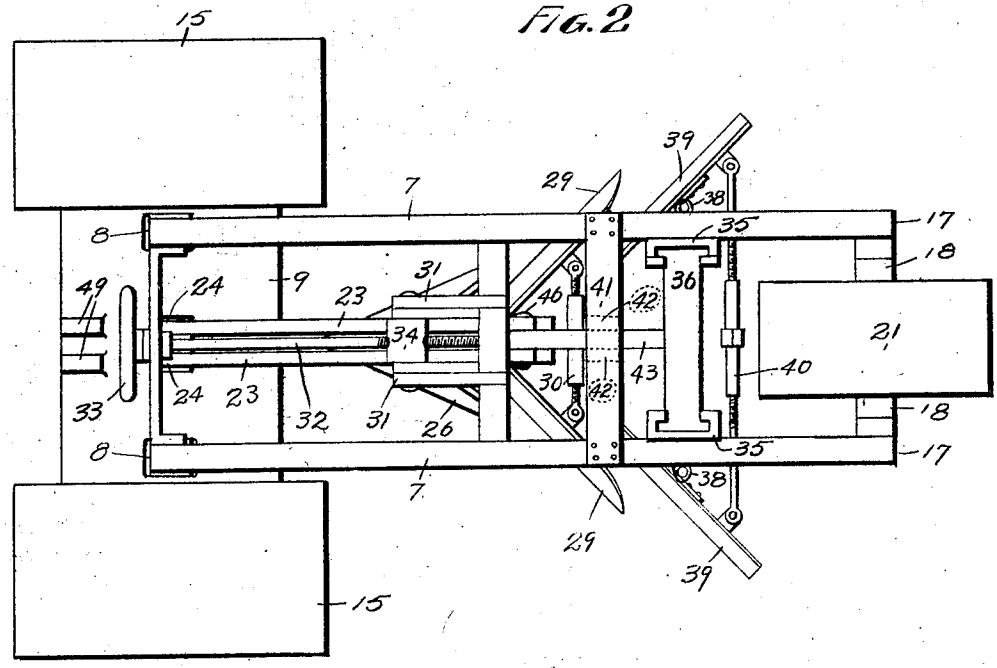


FIG. 2



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FIG. 3

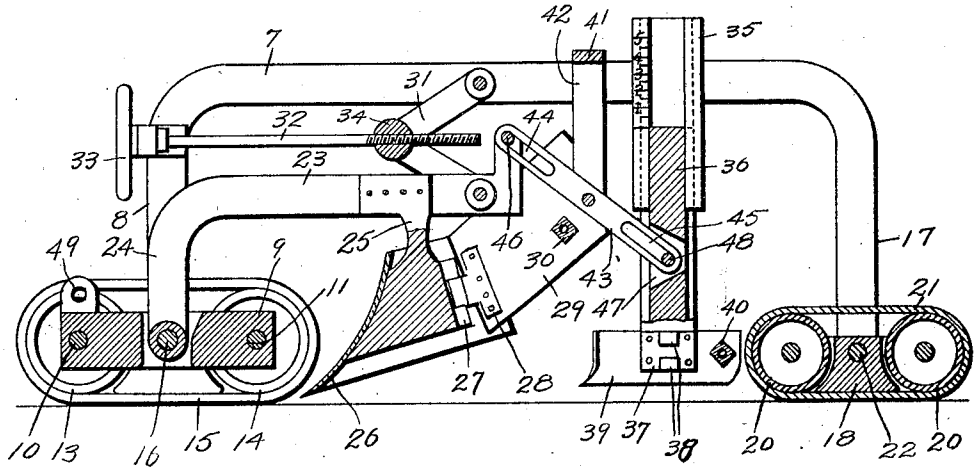


FIG. 5

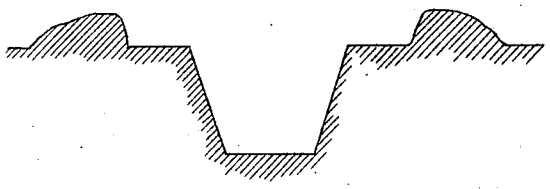


FIG. 4

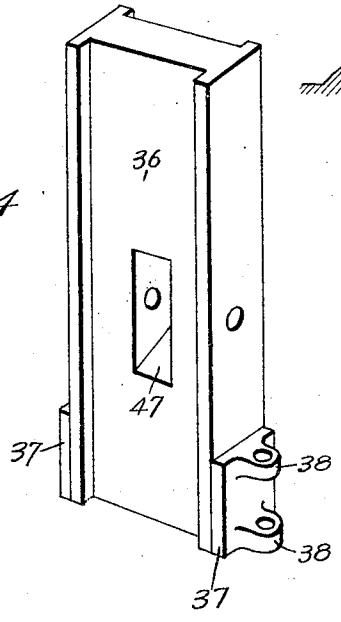
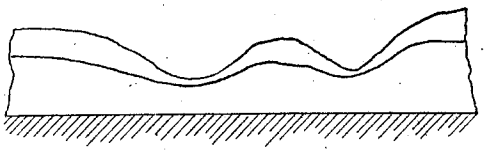


FIG. 6



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Patented Apr. 22, 1924. 1,491,168

UNITED STATES PATENT OFFICE.

EDWARD PRENDERGAST, OF ST. LOUIS, MISSOURI.

DITCHING MACHINE.

Application filed December 3, 1921. Serial No. 519,598.

To all whom it may concern:

Be it known that I, EDWARD PRENDERGAST, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Ditching Machines, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in ditching machines, and has for its primary object a machine for ditching lowlands, so that the same can be drained and utilized.

A further object is to construct a ditching machine in which the plow is readily adjustable up and down, so that a ditch having a bottom which will readily drain off water can be made irregardless of the topography of the land.

A still further object is to construct a ditching machine which has an attachment so that a berm can be formed on either side of the ditch. This berm can be made various widths according to the kind of material worked in.

Fig. 1 is a side elevation of a ditching machine embodying my invention with the furrow opener raised.

Fig. 2 a top plan view of the same.

Fig. 3 a longitudinal vertical section.

Fig. 4 a perspective view of the slide which carries the berm forming blades.

Fig. 5 a cross section of a ditch.

Fig. 6 a longitudinal section of the same.

In the construction of my device I employ a pair of U-frames 7. These U-frames have their front ends 8 pivotally mounted in a frame 9. In this frame are mounted shafts 10 and 11 which carry wheels 13 and 14 over which flexible bands 15 are placed. These flexible bands are for the purpose of preventing the front from sinking into soft or marshy ground. The frames 8 are pivoted in the frame 9 by means of a shaft or rod 16. The rear ends 17 of the frames 7 are pivotally secured to a frame 18. The frame 18 has extensions 19 which extend upon either side of rollers 20. These rollers have the flexible band 21 placed over them.

It will be noted from Fig. 2 that the flexible band 21 is mounted centrally between the frames 7 and is designed to ride in the bottom of the ditch when formed. The ends 17 are pivoted to the frame 18 by means of a shaft 22. Mounted between the frames 7 are a pair of L-frames 23. Their forward ends 24 being pivotally mounted in the frame 9 and are likewise secured to the shaft 16. Secured between the frames 23 and near their free end is a casting 25 to which is secured a plow share or furrow opener 26. This furrow opener is preferably V-shaped, so as to throw the ground both ways while cutting. Formed integral with the casting 25 are ears 27 to which are pivotally secured castings 28. These castings 28 are in turn secured to cutters 29. These cutters cutting the side slope of the ditch and are adjustably mounted by means of a turn buckle 30.

It will be noted that the blades 29 may be adjusted, by means of the turn buckle 30, to and from each other, and thus the angle of inclination of the slide slopes may be varied. Secured to the frames 7 and 23 is a toggle 31. This toggle is operated by means of a screw 32 and hand wheel 33. By the manipulation of the hand wheel and screw, the nut 34 which is attached to the toggle may be drawn forward or moved backward, and thus raise and lower the plow 26 together with the side slope blades 29. Secured to each of the frames 7 is a slide frame 35 in which the slide 36 is mounted. This slide has secured to either side and near its bottom 8, a casing 37 which has perforated ears 38. Pivotally connected to these ears 38 are blades 39 which form the berm and carry the material removed from the ditch and side walls to the desired distance beyond the edge of the ditch. This width is varied by means of a turn buckle 40 which causes the rear ends of the blades 39 to be brought closer to or further from each other. Secured to the frames 7 is a bar 41. This bar having downwardly extending ears 42, and between the ears is pivotally mounted a lever 43. This lever being slotted adjacent its ends as indicated by the numeral 44 and 45. The slot 44 receiving the stud 46 which is secured to the frames 23. The slotted end 45 being pivotally secured within the opening 47 formed in the slide 36 by means of the stud or shaft 48. In this way the blades 39 are moved in the opposite direction to the plow 26. In other words, when the plow 26 is dropped downward to cut a deeper ditch, the blades 39 are simultaneously raised, so that the blades will always ride on the surface of the ground.

This is essential, since it is necessary to continuously feed the plow up and down when passing over rough ground, as illustrated in Fig. 6, in order to maintain a proper bottom for the ditch, and were the blades 39 not adjustable with and in the opposite direction to the plow 26, the blades 39 would at times form an auxiliary ditch on either side of the main ditch. The frame 9 is provided at its forward end with perforated ears 49 for the purpose of attaching a draw bar thereto and pulling the machine by a tractor or horse power, or when making a very deep cut a great power is necessary to pull. The device, block and tackle can be attached thereto and the power thus multiplied so that the device can be pulled along. This latter method is especially desirable when the machine is used in swampy lands, as it is very hard to get a tractor which is powerful enough to pull the device without sinking the same into the mud so deep that it is useless. In this kind of soil I use a tractor which is equipped with a drum or nigger head, and run the tractor ahead a certain distance and attach the block and tackle, and then draw the ditcher up to the tractor; then run the tractor ahead again and repeat the operation.

It will be noted from Fig. 3 that I provide the slides 35 with a gage. This is for the purpose of determining the depth at which the plow is sunk into the ground. The plow 36 and scraper 39 work in opposite directions, so that when the scraper 39 is raised a certain distance above the ground, the plow will sink a corresponding distance below. In other words, when the slide 36 is raised to the numeral 1 on the gage, which indicates that the point of the plow is one foot below the lower edge of the scraper 39. In other words, the plow is cutting to a depth of one foot below the surface. This is essential, especially where draining is done as the points along the proposed ditch are marked by the surveyor as to the depth that the ditch is to be at that particular point, so as to maintain the proper water shed. In this way the operator of the ditching machine can regulate the depth of the plow, and maintain the proper inclination or pitch of the ditch by noting the marks along the proposed route of the ditch.

The operation of my device is as follows— In cutting a ditch, the machine is started moving forward, when this has been done the hand-wheel 33 is turned so as to spread the toggle, this forces the furrow opener 26 downward into the ground. The furrow opener will first commence to cut a V shaped ditch but due to the fact that the bars 23 are pivotally mounted, the furrow opener will swing in a circle and gradually bring the lower edge horizontal. This lowering is also assisted by the fact that the rear band 21 travels on the bottom of the furrow. This traveling on the bottom causes the bars 7 to swing downward and carry with them the toggle 31. As previously pointed out, the lowering of the furrow opener raises the scraping blades 39 proportionally so that the berm on either side of the ditch will be formed on the surface of the ground and the blades 39 will do practically no cutting of the surface except where slight bumps or projections of the earth may occur. In this case the blades will level this off.

At no time is my device used in such a manner that a V shaped ditch will be cut, it being essential that the bottom of the ditch be left flat so that the band 21 can travel therein.

Having fully described my invention, what I claim is:

1. A ditching machine comprising a U frame, flexible bands carried by said frame for supporting the same, a pivoted frame carried by said frame, means for raising and lowering the pivoted frame, a plow secured to said pivoted frame and operable therewith, cutting blades having their front ends flexibly secured to said plow at its rear end, means for adjusting the rear end of said cutting blades to and from each other, and adjustable scraping blades carried by the U frame, said blades being located to the rear of the cutting blades.

2. A ditching machine comprising a pair of inverted U frames, a plurality of rollers carried by the open ends of said frames, flexible bands passing around said rollers, a pivoted frame mounted between said U frames and adjacent the forward set of said rollers, a plow carried by said pivoted frame, means for adjusting said plow and frame up and down so as to register the depth of cutting of said plow, cutting blades pivotally secured to said plow adjacent its rear end, said cutting blades adjustable to and from each other, scraper blades carried by the U frames and located to the rear of said cutting blades, said scraper blades adjustable simultaneous with said plow and in the opposite direction thereto.

3. A ditching machine comprising a pair of inverted U frames, a frame pivotally carried by each leg of said U frames, rollers carried by said pivoted frames, flexible bands passing around said rollers for supporting the U frames, an L frame pivotally carried by one of the pivoted frames, a plow carried by said L frame, means for raising and lowering said L frame, cutting blades having one end pivotally secured to said plow adjacent its rear end, means for adjusting the free ends of said cutting blades to and from each other, scraping blades carried by the U frame and located in the rear

of the cutting blades, and a lever connection between the scraper blades and L frame whereby the scraper blades are moved in a vertical direction opposite to the vertical movement of the plow.

4. The ditching machine of claim 1 in which a toggle lever and screw are employed for raising and lowering the plow.

5. The ditching machine of claim 2 in which a toggle lever and screw are employed for raising and lowering the plow.

6. The ditching machine of claim 3 in which a toggle lever and screw are employed for raising and lowering the plow.

In testimony whereof, I have signed my name to this specification.

EDWARD PRENDERGAST.