907,059.

W. KRUEGER.

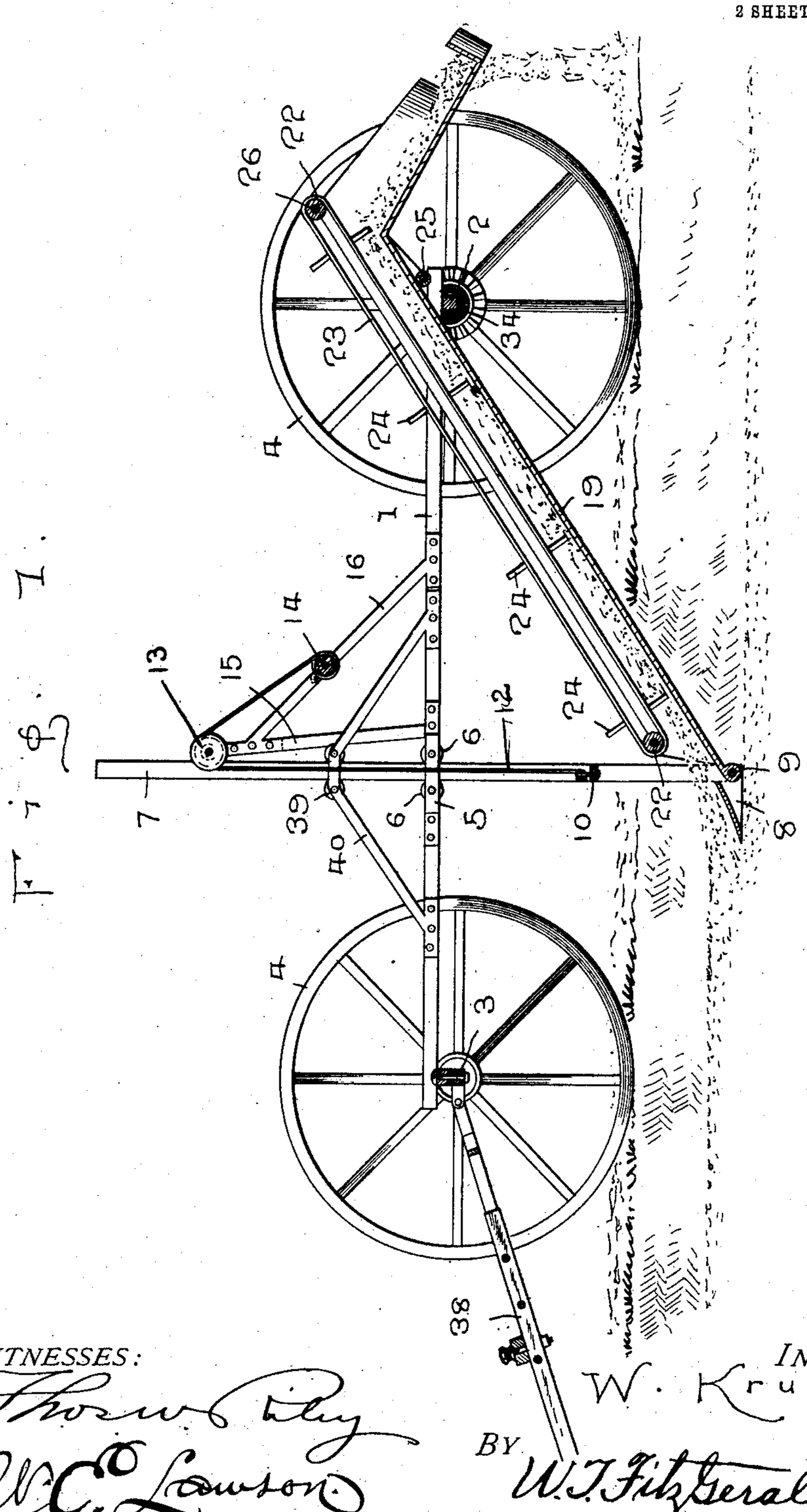
DITCHING MACHINE.

APPLICATION FILED APR. 21, 1908.

Patented Dec. 15, 1908.

2 SHEETS—SHEET 1.

FIG. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

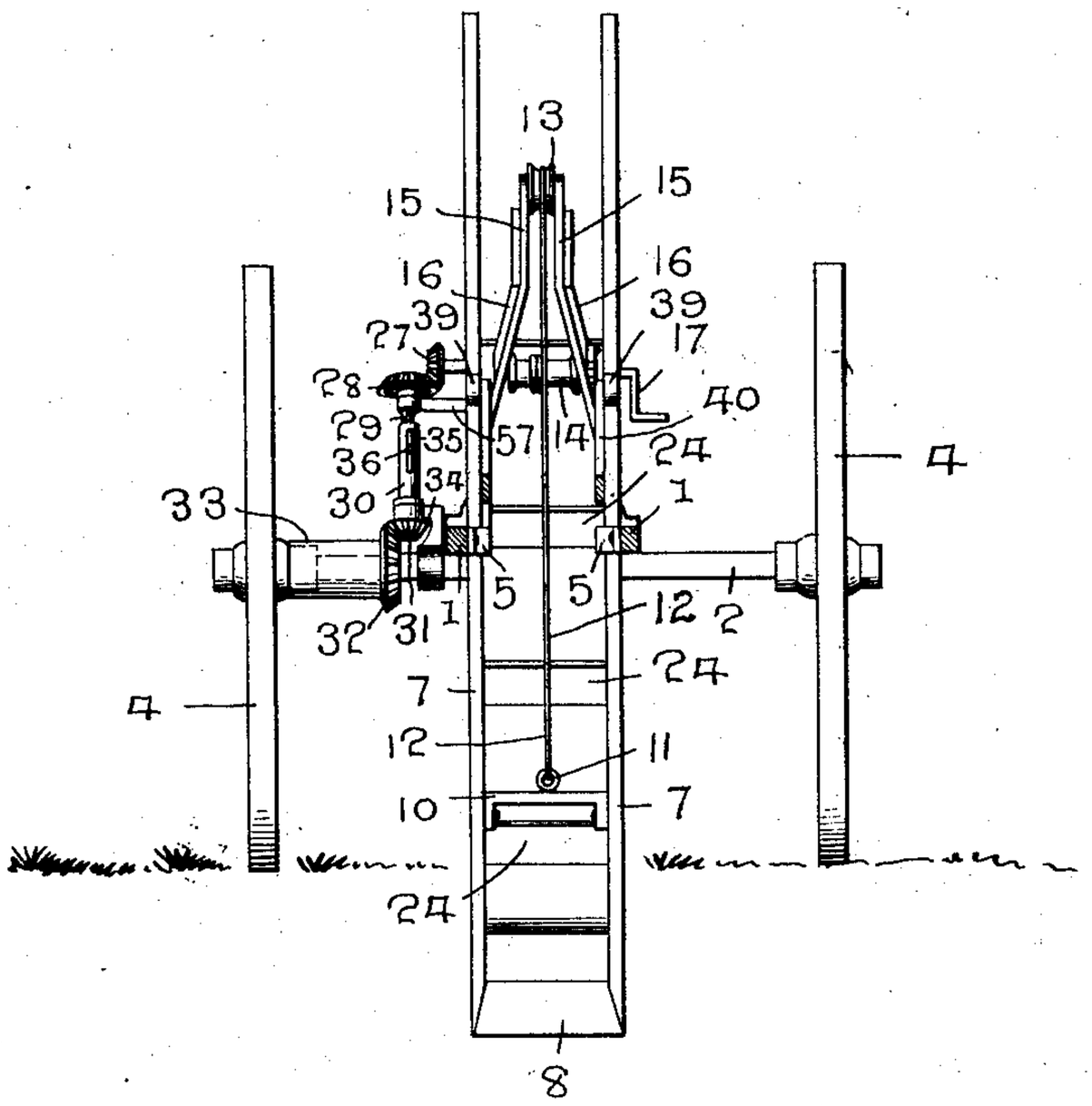
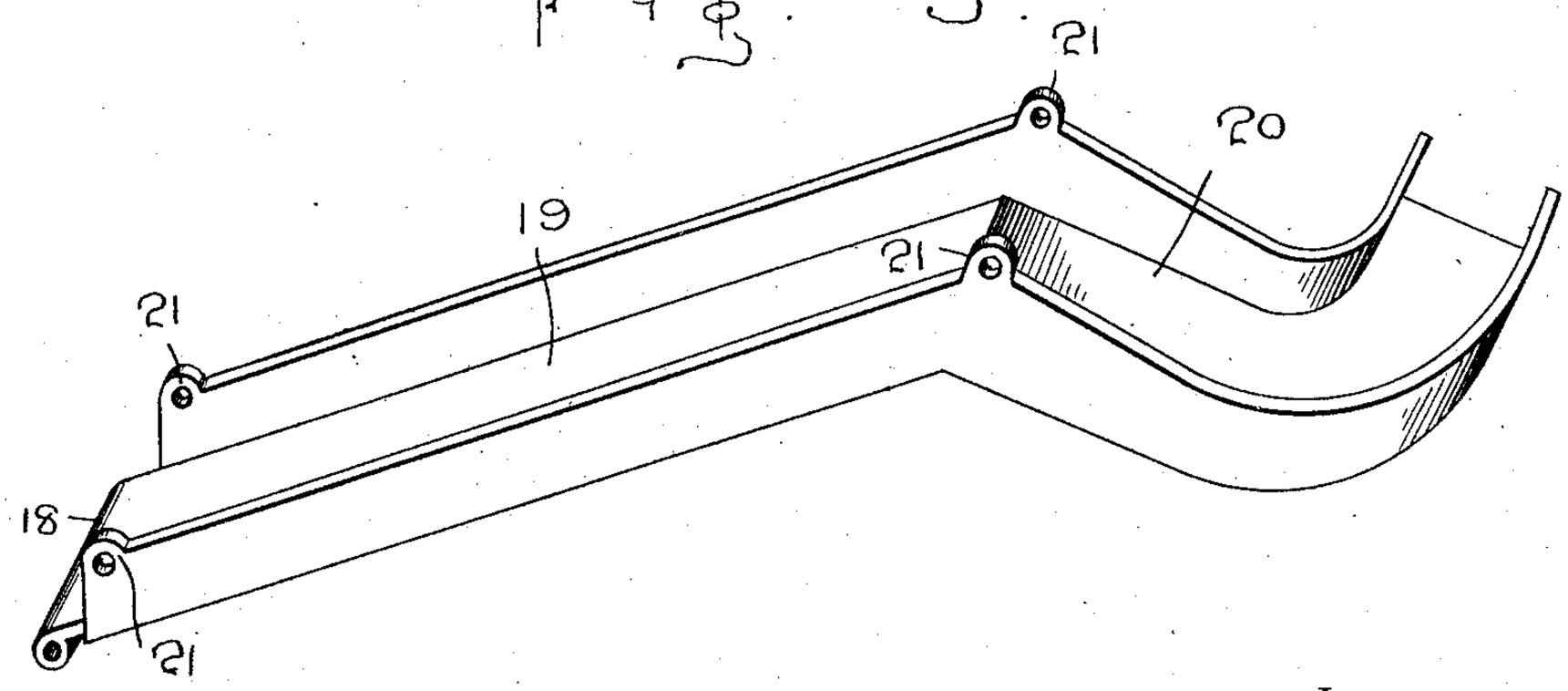


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILHELM KRUEGER, OF LAKE PARK, IOWA.

DITCHING-MACHINE.

No. 907,059. Specification of Letters Patent. Patented Dec. 15, 1908.

Application filed April 21, 1908. Serial No. 428,371.

To all whom it may concern:

Be it known that I, WILHELM KRUEGER, a citizen of the United States, residing at Lake Park, in the county of Dickinson and State of Iowa, have invented certain new and useful Improvements in Ditching-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in ditching machines and it is an object of the invention to provide a novel device of this character wherein the earth loosened may be suitably elevated and dumped to one side of the ditch being formed.

It is also an object of the invention to provide a novel device of this character wherein the cutting plow may be adjusted vertically with relation to the frame of the machine for varying the depth of cut.

It is also an object of the invention to provide a novel device of this character which will be simple in construction, efficient in practice and comparatively inexpensive to manufacture.

With the above and other objects in view, the invention consists in the details of construction and in the novel arrangement and combination of parts to be hereinafter referred to.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification, wherein like characters of reference denote corresponding parts in the several views, and in which,

Figure 1 is a central, longitudinal section of the machine, embodying the invention. Fig. 2 is a front elevation thereof, and, Fig. 3 is a perspective view of a detail of the invention.

In the drawings, 1 denotes a frame suitably supported on a rear axle 2 and a front axle 3. Said axles 2 and 3 have mounted thereon the wheels 4 of any ordinary or preferred structure. Approximately centrally the length thereof, the frame has secured to its opposed faces the brackets 5, in which are mounted the wheels 6, said wheels being so supported as to permit the passage therebetween of the vertical standards 7. These standards have secured at their lower edges the plow or cutting blades 8 and are also united at their ends by the cross bar 9. The standards are further connected above the plow or beneath the frame by a cross piece 10. The cross piece 10 is provided at a point centrally of the standard 7 with an eye 11, to which is secured a flexible member 12, which passes up over a pulley 13 and is secured to a drum 14. The pulley 13 is mounted between two upstanding members 15 secured to the frame and the drum 14 is mounted between two inclined members 16 extending from the frame 1 to the members 15 adjacent their upper ends. The drum 14 is rotated through the medium of a crank 17. It is thought by this arrangement to be obvious how the position of the plow 8 with relation to the frame 1 may be adjusted or varied.

Pivotally engaging the cross bar 9, is an apron 18 of a chute 19. This chute has one end portion 20 arranged on an incline with the main portion of the chute and this incline portion is angular, as fully shown in Fig. 3. By this arrangement, it will be observed that the earth loosened by the plow 8 and forced up the chute 19 will be discharged by the angular portion 20 to one side of the ditch, as is indicated in Fig. 1. The chute 19 adjacent its lower end and at the junction therewith of the angular portion 20, has projecting upward from its sides the perforated ears 21, in which are mounted rollers 22. Over these rollers pass an endless apron belt 23 having projecting therefrom the blades 24. The apron 23 is moved in such a direction as to cause the blades 24, when adjacent the chute 19, to move upwardly and thereby elevate the earth loosened by the plow 8.

The upper end of the chute 19 may be supported as desired, but it is preferable that it rest loosely on a roller 25 mounted on the frame 1 of the machine. By this arrangement, freedom of movement is assured the chute 19 when the plow 8 is being elevated or lowered.

In order that the apron 23 may be operated, the shaft 26 of the upper roller 22 projects beyond one side of the chute 19 and to this projected portion is fixed a beveled gear 27, which meshes with a gear 28 fixed to the shaft 29 which is telescopic with relation to the shaft 30. The shaft 30 has fixed thereon a bevel gear 31, which meshes with a gear 32, carried by a sleeve 33 embracing the axle 2 and secured to the wheel 4.

The shaft section 30 is mounted in a bearing 34 pivotally mounted on the axle 2, or, in other words, is so mounted as to rotate thereabout to compensate for the different posi-

tions assumed by the chute 19, as is believed to be apparent. The shaft 31 is hollow and is provided with a slot 35 through which passes a pin 36 fixed to the shaft 29, which enters the shaft 30. The shaft 29 is further held by a bearing 37 fixed to a side of the chute 19.

Any method may be employed for imparting movement to the frame 1, but in the present instance, said frame is shown as connected with a suitable drafting mechanism 38.

The standards 7 also pass between the rollers 39 arranged in vertical alinement with the rollers 6, hereinbefore referred to. These rollers 39 are suitably mounted in brackets 40, of an approximate inverted V-shape, having their free ends secured to the frame. By this arrangement any undue lateral movement of the standards is obviated.

I claim:

1. In a ditching machine, the combination of a frame, a plow, means for adjusting the plow vertical with relation to the frame, a chute leading from the plow to one side of the frame said chute being pivoted to the plow and loosely engaging the frame and an elevating means acting in conjunction with the chute.

2. In a ditching machine, the combination with a frame; of rods vertically movable with relation to the frame, a plow carried by the rods, a chute pivotally secured at one end between the rods, a roller mounted on the frame, said chute resting on said roller and an elevating means acting in conjunction with the chute.

3. In a ditching machine, the combination of a frame, rollers mounted in the frame, brackets carried by the frame, rollers mounted in the brackets, above the rollers of the frame, rods passing between the roller of the brackets and the roller of the frame, a plow carried by the rods, a chute leading from the plow and a conveying means acting in conjunction with the chute.

4. In a ditching machine, the combination of a frame; of rods vertically movable with relation to the frame, a pulley mounted above the frame beneath the rods, a cross bar connecting the rods, a plow carried by the frame and a flexible connection secured to the cross bar passing over the pulley and engaging the drum, a plow carried by the lower ends of the rods and a chute pivoted to the plow and loosely engaging the frame.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM KRUEGER.

Witnesses:

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