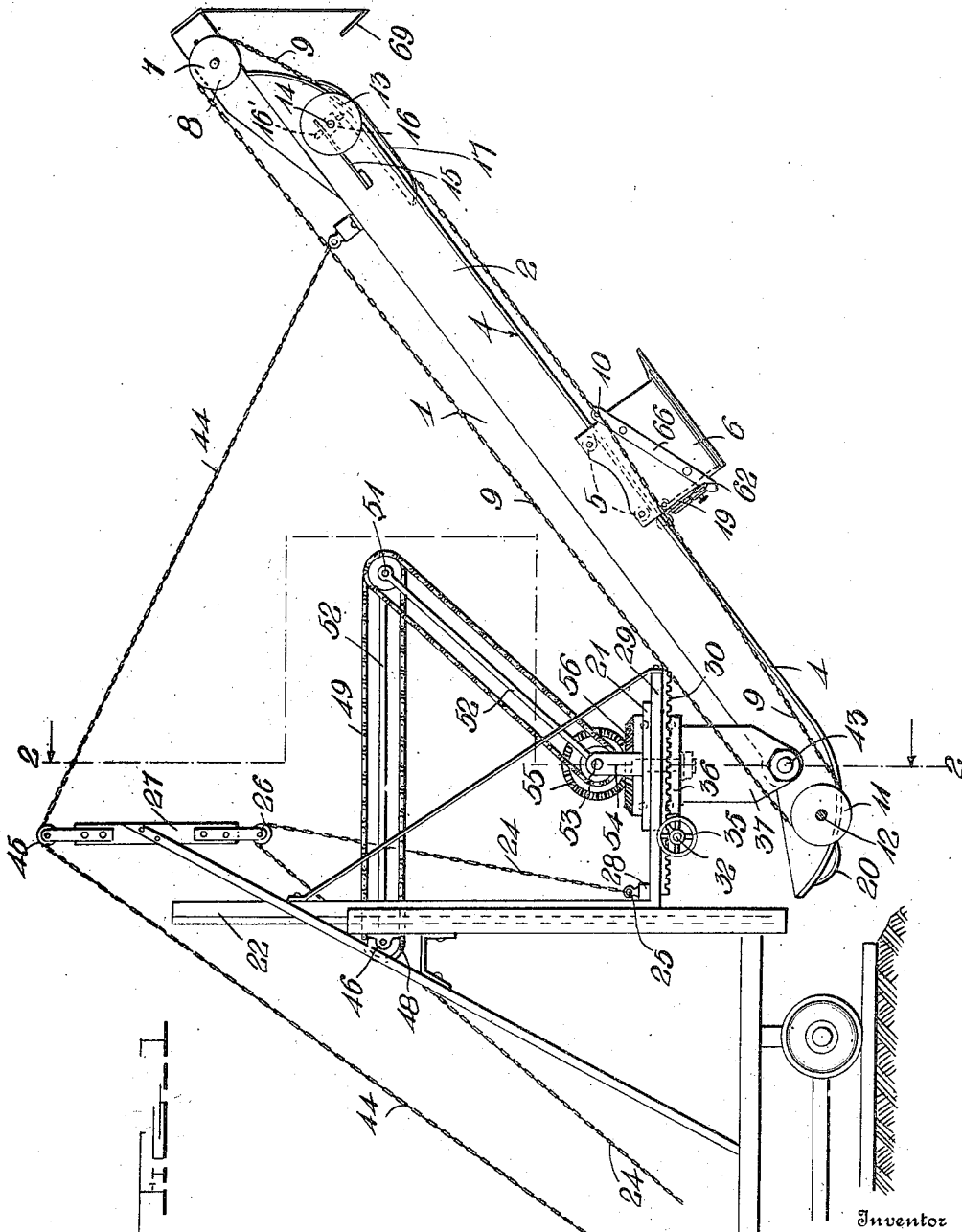


F. D. MEYER.
DITCHING MACHINE.
APPLICATION FILED DEC. 7, 1908.

949,937.

Patented Feb. 22, 1910.

3 SHEETS—SHEET 1.



Witnesses
J. S. Meyer

R. A. Duffie

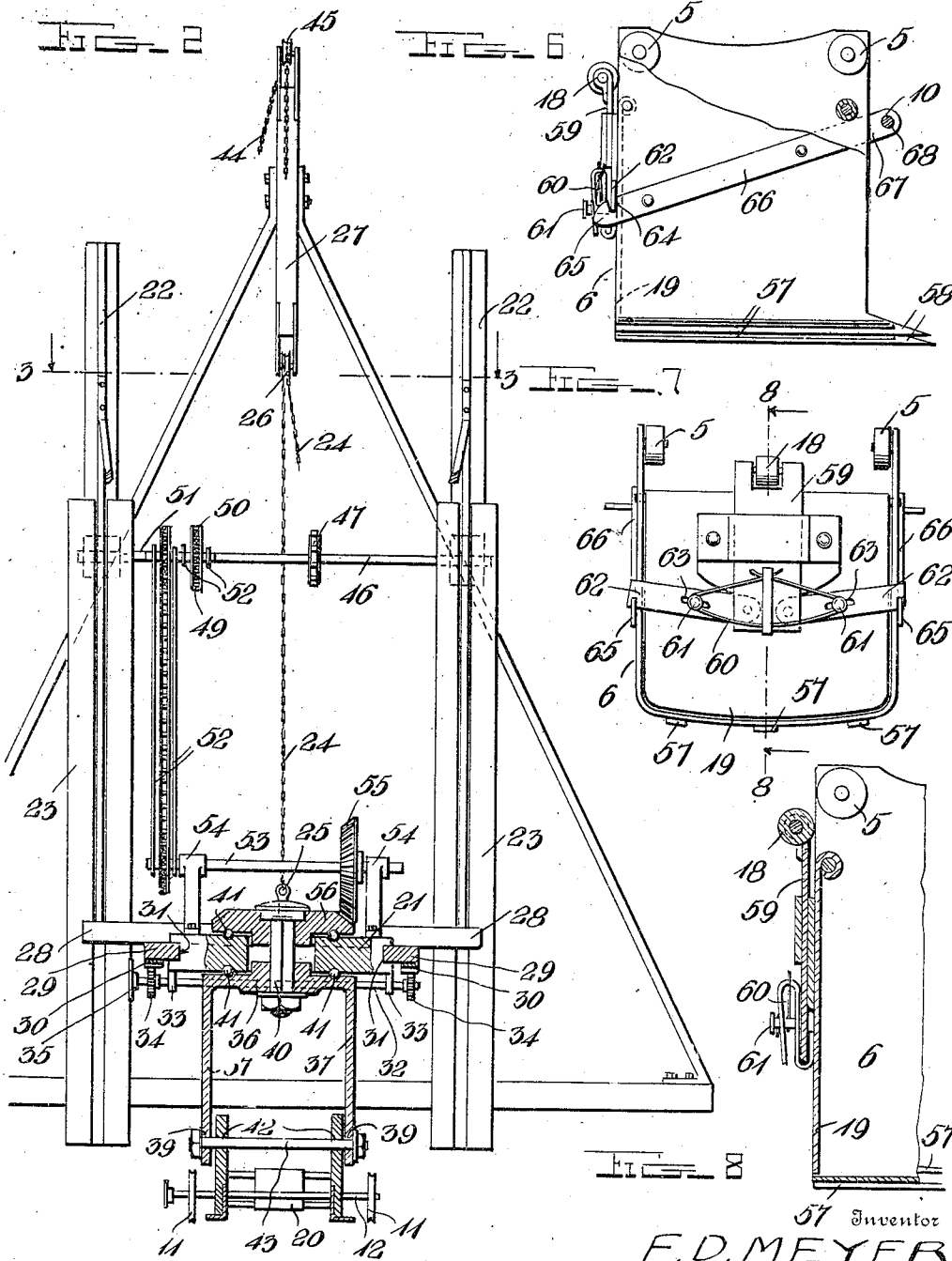
Inventor
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Witnesses
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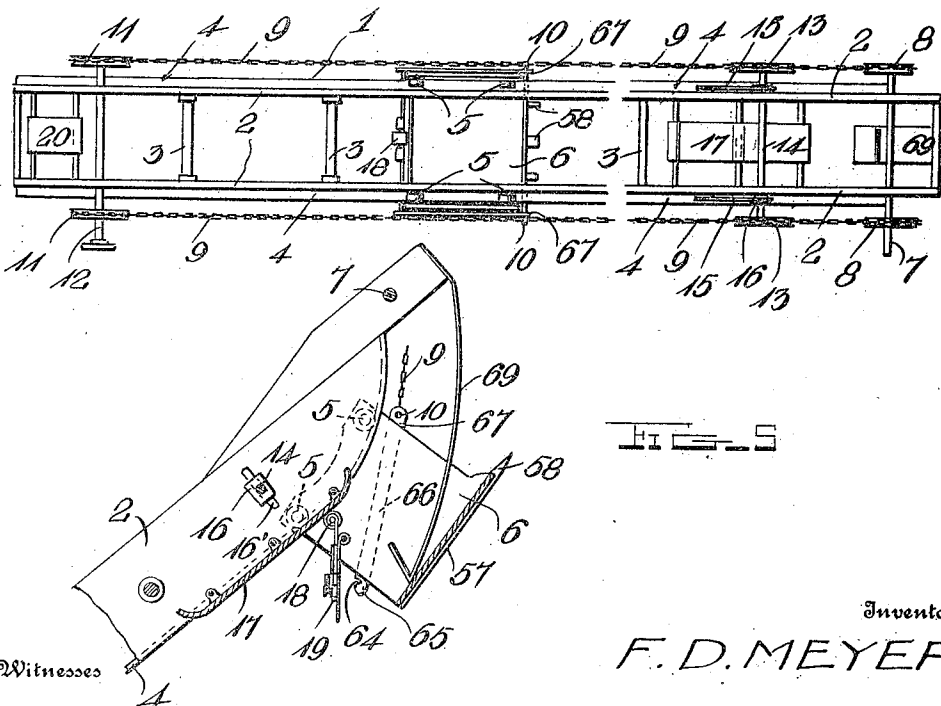
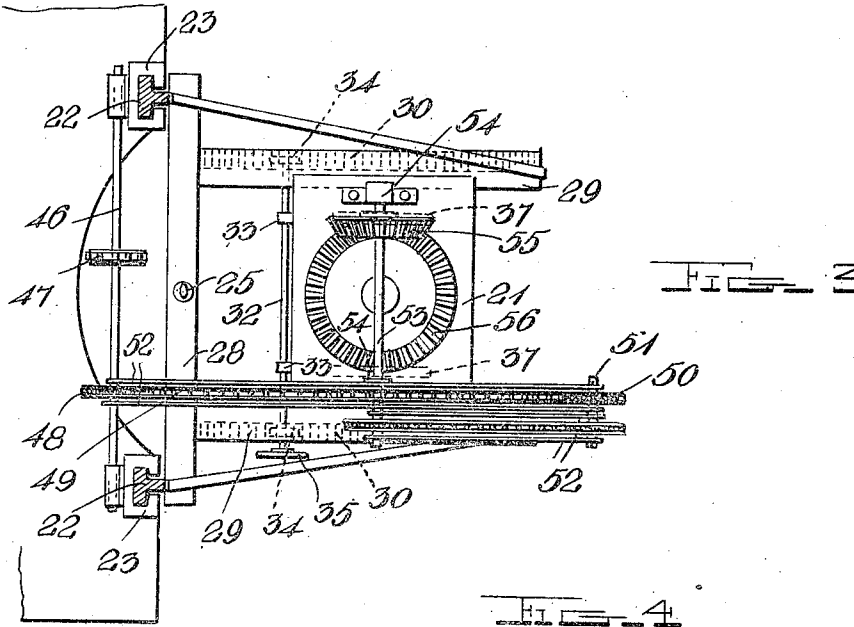
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Witnesses

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UNITED STATES PATENT OFFICE.

FRED D. MEYER, OF MORRIS, MINNESOTA.

DITCHING-MACHINE.

949,937.

Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed December 7, 1908. Serial No. 466,305.

To all whom it may concern:

Be it known that I, FRED D. MEYER, a citizen of the United States, residing at Morris, in the county of Stevens and State of Minnesota, have invented certain new and useful Improvements in Ditching-Machines, of which the following is a specification.

My invention has relation to improvements in ditching machines of the steam shovel type, and shall be known as the "Meyer perfect ditcher."

The object of my improvements are, first, the operation of a shovel on a single crane; second, to afford facilities for the vertical manipulation of the entire crane, thus making it possible to use the shovel thereof at any required depth, between certain limitations, and at the same time, maintain its position at any desired or required angle; third, to afford facilities for moving the crane forward horizontally, without moving the platform supporting motive power, at such times as such movement may be desired; fourth, to afford means for opening and closing the door of said shovel, and fifth to provide means for the thorough cleaning of the shovel after each dumping.

With these and other objects in view, my invention consists of the novel construction and arrangement of parts, as are hereinafter described in the following specification, illustrated in the accompanying drawings forming a part thereof, and particularly pointed out in the claims hereunto appended.

The above objects I attain by virtue of the mechanism herein illustrated and described.

In the drawings:—Figure 1 is a side elevation of my improved ditcher. Fig. 2 is a vertical sectional view, taken on the line 2—2 of Fig. 1. Fig. 3 is a horizontal sectional view, taken on the line 3—3 of Fig. 2. Fig. 4 is a plan view of the crane, detached. Fig. 5 is a detail, longitudinal sectional view of the upper portion of the crane, showing the shovel open, the manner of opening the same and showing the scraper in action. Fig. 6 is a detail side elevation of the shovel, parts broken away. Fig. 7 is a rear end view of said shovel. Fig. 8 is a fragmentary, central, vertical, longitudinal sectional view of the shovel, taken on the line 8—8 of Fig. 7.

Referring more particularly to the accompanying drawings, my invention is described as follows:—

The crane 1, provided with longitudinal beams 2, held substantially together by means of the transverse beams 3, has two flanges 4, secured at the lower outer edge of each of said longitudinal beams, said flanges providing runways for the rollers 5, upon which is mounted the shovel 6. The power from either a reversible engine or by utilization of a planer's gear is transmitted to a shaft 7, having keyed to its outer ends sprocket wheels 8. The sprocket chains 9, which are secured to said shovel at the points 10, pass around the pulleys 11, keyed to a shaft 12, which is journaled in suitable bearings at the base of said crane. Said chains are held taut by means of idlers 13, rotatably mounted on a shaft 14, said shaft constantly pressing said idlers against the chains 9, said shaft being in turn pressed downward by means of a spring 15. The shaft 14, is permitted to move at right-angles to the longitudinal axis of said crane by means of the elongated bearings 16. Near the outer end of said crane a trip 17, is provided, the lower surface thereof being convex so that the roller 18, will travel thereon with ease, causing a door 19, of said shovel to swing open. The construction and opening and closing of the door of said shovel will be described and explained more fully hereinafter. A similar trip 20, is provided at the inner end of said crane, the purpose of which is to trip certain latches of said door 19, causing said door to be locked in position after closing.

The adjustable platform 21, is provided with vertically sliding beams 22, fitting into and moving in vertically disposed carrying beams 23. Said platform may be elevated or lowered by means of a chain 24, secured to the platform by suitable fastening means 25, thence running upward working over a pulley 26, journaled in suitable bearings at the lower end of the vertical beam 27. Secured at the lower end of said sliding beams 22, is a horizontal crosspiece 28. Extending at right-angles and in a horizontal plane with said crosspiece 28, are the guide rails 29, provided on their under faces with rack-bars 30. The inner edges of said guide rails 29, fit in longitudinal grooves 31, cut in the adjacent sides of said platform. A shaft 32, journaled in bearings 33, secured to the rear edge of said platform, has keyed near each end thereof suitable gear wheels 34, the

teeth of each intermeshing with the teeth of its corresponding rack-bar. A wheel 35, is keyed to one of the extreme ends of the shaft 32, and may be operated by hand or otherwise. A turntable 36, having the downwardly extending flanges 37, which are provided with perforations 39, is connected to said platform by means of a square bolt 40, and its motion in azimuth is facilitated by ball bearing arrangement 41. Passing through said perforations 39, and corresponding perforations 42, in the lower ends of the horizontal beam 2, of said crane is a bolt 43, or such other suitable connecting means as is adapted to pivotally connect the crane to said flanges 37. Said crane may be elevated or lowered by means of a chain or cable 44, working over the pulley 45, journaled in suitable bearings at the upper end of said vertical beam 27. The arrangement for turning the turntable, thus regulating the azimuth of said crane is as follows:—A horizontal shaft 46, journaled in bearings carried by said beams 22, has reversible power transmitted to it by means of a wheel 47. Said shaft 46, carries another sprocket wheel 48, over which works a sprocket chain 49, which transmits power to a sprocket wheel 50, securely mounted on the shaft 51; said shaft 51, by means of the arms 52, is always held at fixed distances from said shaft 46, and a shaft 53. The shaft 53, is journaled in bearings 54, which are secured to said platform 21. A beveled gear 55, is secured to said shaft 53, and its teeth intermesh with corresponding teeth of the beveled gear 56, which is secured to the upper end of the bolt 40. It is obvious that the outer edge of said platform 21, should be so shaped as to permit of the free movement of the inner end of said crane 1.

Referring to the construction of the shovel it will be readily seen that the same is box shaped, having, however, its front wall removed, and being provided on the under surface of its bottom with longitudinal ribs 57, the forward ends of which protrude forming the prongs 58. When said shovel is traveling toward the outer end of the crane 1, and the roller 18, comes in contact with said trip 17, the slide 59, is pressed downwardly against the resistance of the spring 60, which is coiled around the lugs 61; the latches 62, which are pivoted to the door 19, by means of said lugs 61, passing through the elliptical perforation 63, have their inner ends pivotally connected to the lower end of said slide 59. Thus when said slide is pressed downward the outer ends of said latches are raised upward, disengaging them from the notches 64, cut in the projecting ends 65, of the slanting braces 66, which are riveted securely to the side walls of said shovel. The forward projecting ends 67, of

said braces 66, are provided with perforations 68. The forward end of said crane is provided with a scraper 69, clearly shown in Fig. 5, and it will be obvious that this cleaner is for the purpose of scraping out any earth which might tend to adhere to the inner surface of said shovel. The door 19, of said shovel is closed by gravity, and the latches 62, are caused to engage the notches 64, when said roller 18, passes over said trip 20.

Though I have specifically described my invention, I may exercise the right to make such modifications in the form and construction of my device as do not depart from the spirit of the claims hereunto appended, and as fall within the scope thereof.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a ditching machine comprising a crane, said crane provided with a shovel, said shovel, having three walls, being open at its forward end, the rear wall consisting of a door pivotally connected to the side walls at its upper edge, slanting braces secured to the outer surface of said side walls, said braces terminating in projecting ends provided with notches, latches, their outer ends adapted to be engaged by said notches, a slide at the lower end of which the inner ends of said latches are pivotally connected, lugs projecting from said door, one of each extending through an elliptical perforation in each of said latches, said latches adapted to be disengaged from said notches when pressure is exerted upon the upper end of said slide, said slide adapted to be held in its normal position by means of a spring, substantially as set forth.

2. In a ditching machine, a turntable provided with two downwardly extending flanges having perforations extending there-through near their lower ends, a crane adapted to be pivotally connected to said flanges by nut and bolt connections, or the equivalent thereof.

3. In a ditching machine comprising a platform, a turntable to which is pivotally connected a crane, adapted to revolve in the center of said platform, a beveled gear resting upon said platform and connected to said turntable by means of a square bolt, a vertically disposed beveled gear by which power is transmitted to said first-named beveled gear for the rotation of said turntable, substantially as shown.

4. In a ditching machine comprising a platform provided with guide rails, rack-bars secured to said guide rails on their under surfaces, the central portion of said platform adapted to move forwardly and rearwardly upon the guide rails thereof, a shaft journaled in suitable bearings secured to the rear edge of the movable portion of

said platform, gear wheels keyed near each end of said shaft, the teeth of each intermeshing with the teeth of its corresponding rack-bar, a wheel, keyed to one of the extreme ends of one of the shafts, as means to transmit power thereto, substantially as shown and described.

In testimony whereof I affix my signature, in presence of two witnesses.

FRED D. MEYER.

Witnesses:

GEO. W. BERSE,

W. C. BICKNELL.