

37. EXCAVATING.

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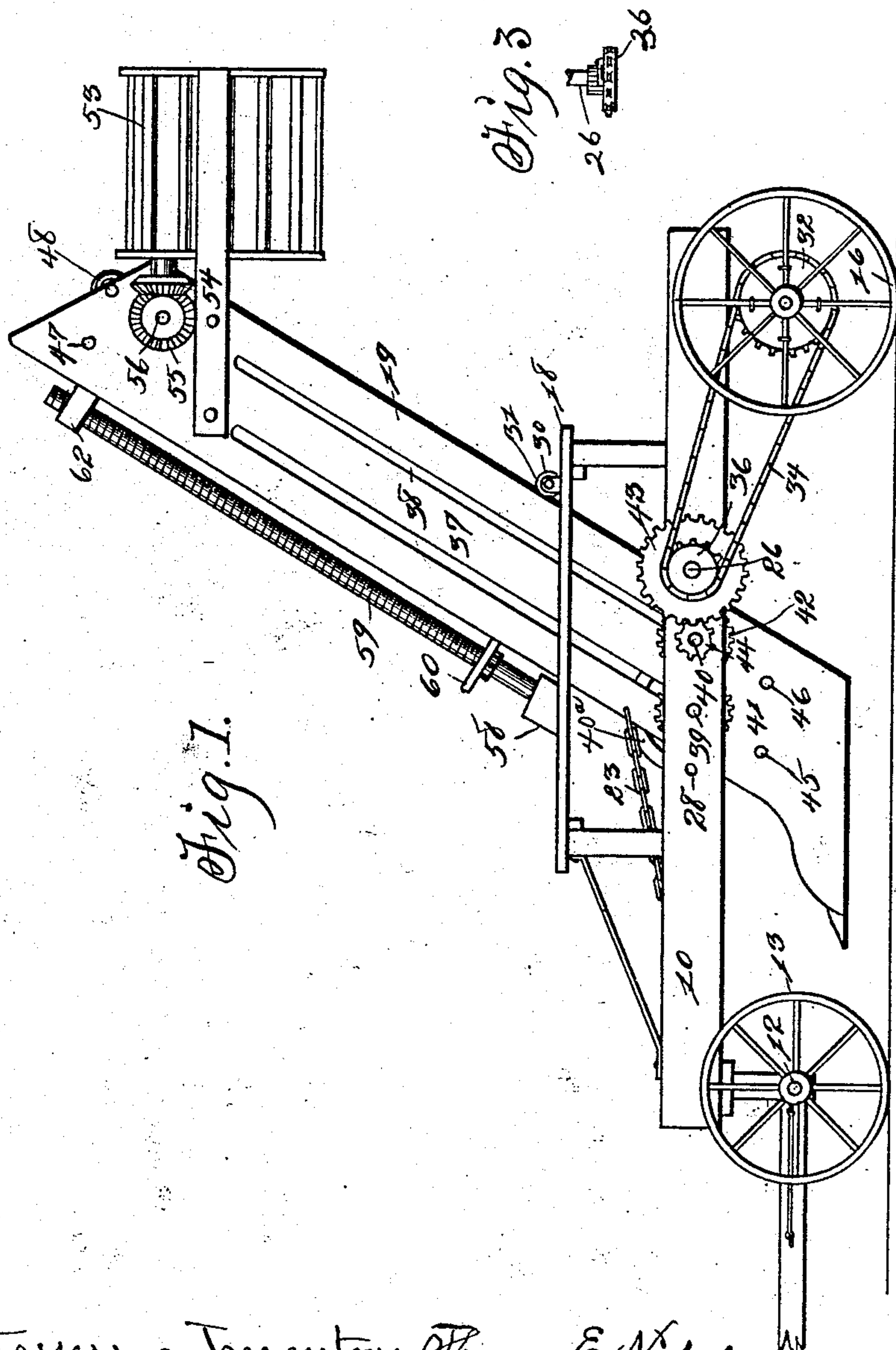
No. 881,942.

PATENTED MAR. 17, 1908.

T. E. NICHOLSON.
DITCHING MACHINE.

APPLICATION FILED FEB. 19, 1907.

2 SHEETS—SHEET 1.



Witnesses: } Inventor: Thomas E. Nicholson,
A. H. Orwig. }
R. H. Fairbrock } By Thomas G. Orwig, Attorney.

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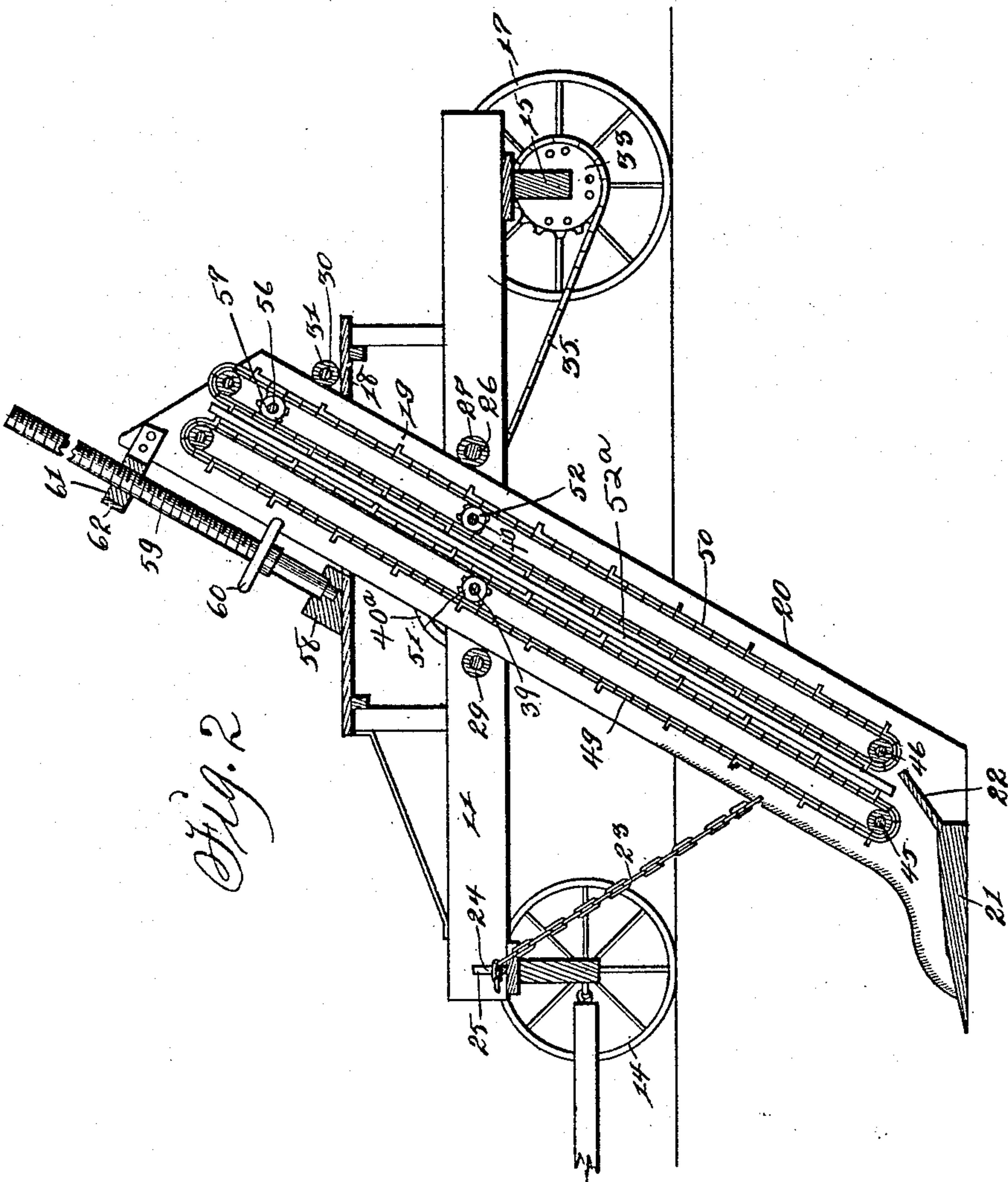
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A. H. Orwig.
H. H. Heibrock.

Inventor: Thomas E. Nicholson,
By Thomas G. Orwig, attorney.

UNITED STATES PATENT OFFICE.

THOMAS E. NICHOLSON, OF WASHINGTON, IOWA.

DITCHING-MACHINE.

No. 881,942.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed February 19, 1907. Serial No. 358,997.

To all whom it may concern:

Be it known that I, THOMAS E. NICHOLSON, a citizen of the United States, residing at Washington, in the county of Washington and State of Iowa, have invented a new and useful Ditching-Machine, of which the following is a specification.

The object of this invention is to provide improved means for cutting ditches and elevating earth therefrom.

A further object of this invention is to provide improved means for elevating earth from a ditch.

A further object of this invention is to provide improved means for adjusting the altitude of a plow and elevating mechanism in a ditching machine.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a vertical longitudinal section of the machine. Fig. 3 is a detail of a sprocket wheel and shaft with connections.

In the construction of the machine as shown the numerals 10, 11 designate beams arranged side by side in a horizontal plane. The beams 10, 11 are supported at their forward ends on a steering axle 12 mounted on wheels 13, 14, and at their rear ends on an axle 15 mounted on traction wheels 16, 17. The beams 10, 11 are spaced apart and are surmounted by a platform 18 formed with a central aperture. Side-bars 19, 20, of an elevator frame, are mounted parallel with each other between the beams 10, 11 and extend through the aperture in the platform 18 and the margins of said bars are sharpened to cut sides of the ditch. The lower end portions of the side-bars 19, 20 are connected by a plow 21 provided with an upwardly and rearwardly inclined mold board 22. A chain 23 is connected at one end to the lower forward portion of the side-bars 19, 20 and extends upward and forward therefrom and is adapted to be engaged with a slot 24 in a standard 25 fixed to and between the forward end portions of the beams 10, 11. A shaft 26 is mounted for rotation in bearings in and extends through the beams 10, 11 and a sleeve 27 is mounted loosely on said shaft between the beams and engages the rear margins of the side-bars 19, 20. A rod 28 is mounted in and connects the

beams 10, 11 in front of the shaft 26 and a sleeve 29 is mounted loosely on said rod between the beams and engages the forward margins of the side-bars 19, 20. A rod 30 is mounted on the platform 18 above and to the rear of the shaft 26, and a sleeve 31 is mounted loosely on said rod and engages the rear margins of the side-bars 19, 20 above the sleeve 27. It is the function of the sleeves 27, 29 and 31 to guide and support the elevator frame. Sprocket wheels 32, 33, are mounted on the traction wheels 16, 17 and are connected by chains 34, 35 to sprocket wheels 36 (one only of which is shown) on the shaft 26 and connected thereto by pawl and ratchet (Fig. 3). Longitudinal slots 37, 38 are formed in the side-bars 19, 20 and shafts 39, 40 are mounted for rotation in bearings in the beams 10, 11 and extended through said slots from side to side of the machine. Gear wheels 41, 42 are mounted on end portions of the shafts 39, 40 and mesh with each other, and a spur gear 43 on the shaft 26 meshes with a pinion 44 on the shaft 40. Shafts 45, 46 are mounted for rotation in and connect the lower end portions of the side-bars 19, 20, and similar shafts 47, 48 are mounted parallel therewith in and connect the upper end portions of said side-bars. Elevator flights or aprons 49, 50 are mounted for travel on the shafts 45, 46, 47 and 48 and are driven by sprocket wheels 51, 52 on the shafts 39, 40, a bar 52^a between said flights holding them to the driving wheels. The flights or aprons 49, 50 are arranged parallel with each other and inclined in the plane of the elevator frame.

A side-delivery apron or carrier 53 is supported on the upper end portion of the side-bars 19, 20 and to the rear thereof, and is driven by a shaft 54 connected by bevel gear 55 to a shaft 56 mounted for rotation in said side-bars and driven by sprocket wheel 57 connecting with the flight 50. A step 58 is mounted on the platform 18 in front of the elevator and a screw 59 is stepped therein and provided with a hand wheel 60 whereby said screw may be rotated. The screw 59 rises through and is threaded to a nut 61 in a bracket 62 fixed to the upper ends of the side-bars 19, 20.

In practical use the machine is advanced by any desired draft power and the combined plow and elevator are fed into the earth by manual adjustment of the screw 59. The earth is cut by the plow 21 and is fed to

the space between the flights by the mold-board 22. The cut earth is excavated by and between the flights 49, 50 and dumped on the side-delivery carrier 53 and is deposited by said carrier to one side of the path of travel of the machine.

It is the function of the parallel flights or elevators 49 and 50 to receive cut earth from the plow 21 and mold-board 22 and carry the same upwardly and rearwardly to the point of deposit, as shown. It will be observed that the flights or elevators 49 and 50 travel in opposite directions, that the cut earth rests on the ascending portion of the flight 50 and is held thereon and the elevation thereof guided and assisted by the ascending portion of the flights 49.

The strain of forward movement of the plow is borne by the chain 23 and its connections to the beams of the machine, and said plow and the elevator frame and elevators may be raised and lowered at will through manual adjustment of the screw 59.

I claim as my invention—

1. A ditching machine, comprising a wheeled truck, a plow depending from said truck, parallel elevators depending from said truck and spaced apart to receive cut earth between them, and driving connections between traction wheels of said truck and said elevators.

2. A ditching machine, comprising a truck, an elevator frame mounted in said truck in an inclined plane and movable longitudinally through said truck, a plow mounted on the lower end of said frame, elevators mounted in said frame, driving connections between traction wheels of the truck and said elevators, and a stay chain fixed to the lower end of said frame and adjustably attached to said truck.

3. In a ditching machine, parallel elevators spaced apart and adapted to receive

earth between them, and means for driving said elevators in opposite directions.

4. In a ditching machine, a frame, side-bars mounted in inclined positions in said frame, said side bars formed with longitudinal slots, roller bearings on said frame supporting said side-bars, shafts on said frame extending through said slots, elevators mounted in parallel relations between said side-bars and driven in opposite directions by said shafts, driving connections between said shafts and traction wheels, a plow on said side-bars, and screw devices for moving said side-bars longitudinally through said frame.

5. A ditching machine, comprising a traction truck, side-bars mounted therein in inclined positions and formed with longitudinal slots, shafts mounted on said truck and extending through said slots, driving connections between the traction wheels of the truck and said shafts, elevators mounted parallel with each other in said frame and spaced apart to receive cut earth between them, a plow between the lower end portions of said side-bars adjacent the lower ends of said elevators, connections between said shafts and the elevators, a side-delivery carrier mounted on the upper ends of said side-bars and geared to one of said elevators, screw mechanism mounted on said truck and engaging said side-bars whereby the elevators and plow may be raised and lowered by manual actuation, roller-bearings on said truck at the front and rear of the side-bars and engaging therewith, and a stay-chain fixed to said side-bars and adapted to be detachably connected to the forward end portion of said truck.

THOMAS E. NICHOLSON.

Witnesses:

ORVILLE ELDER,
J. J. KELLOGG.