

E. W. LILLY.
 COMBINED DITCHING AND GRADING MACHINE.
 APPLICATION FILED APR. 1, 1911.

1,043,610.

Patented Nov. 5, 1912.
 4 SHEETS—SHEET 1.

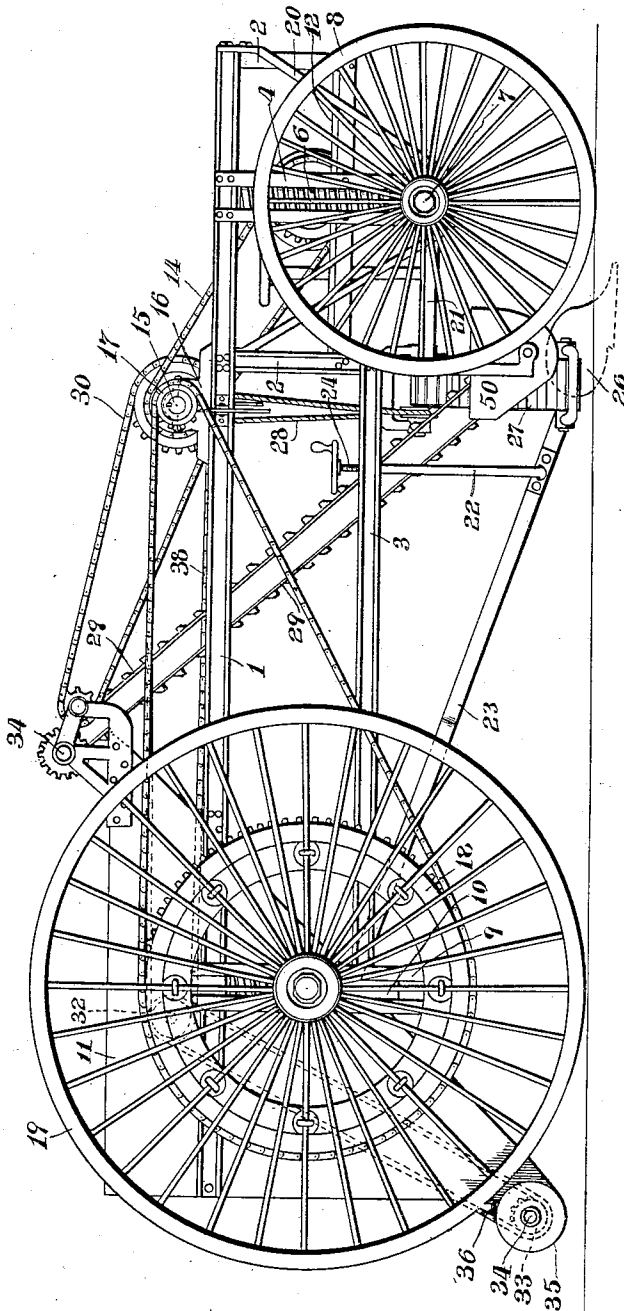


Fig. 1.

Witnesses

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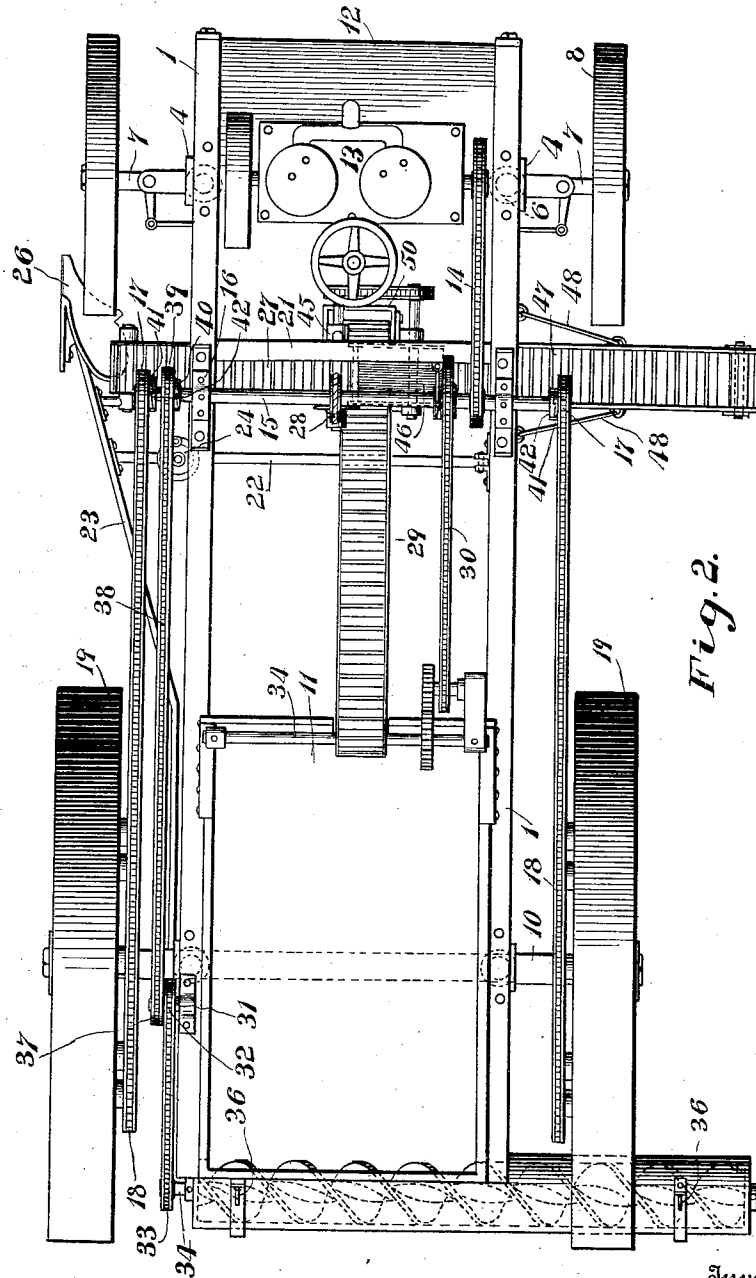


Fig. 2.

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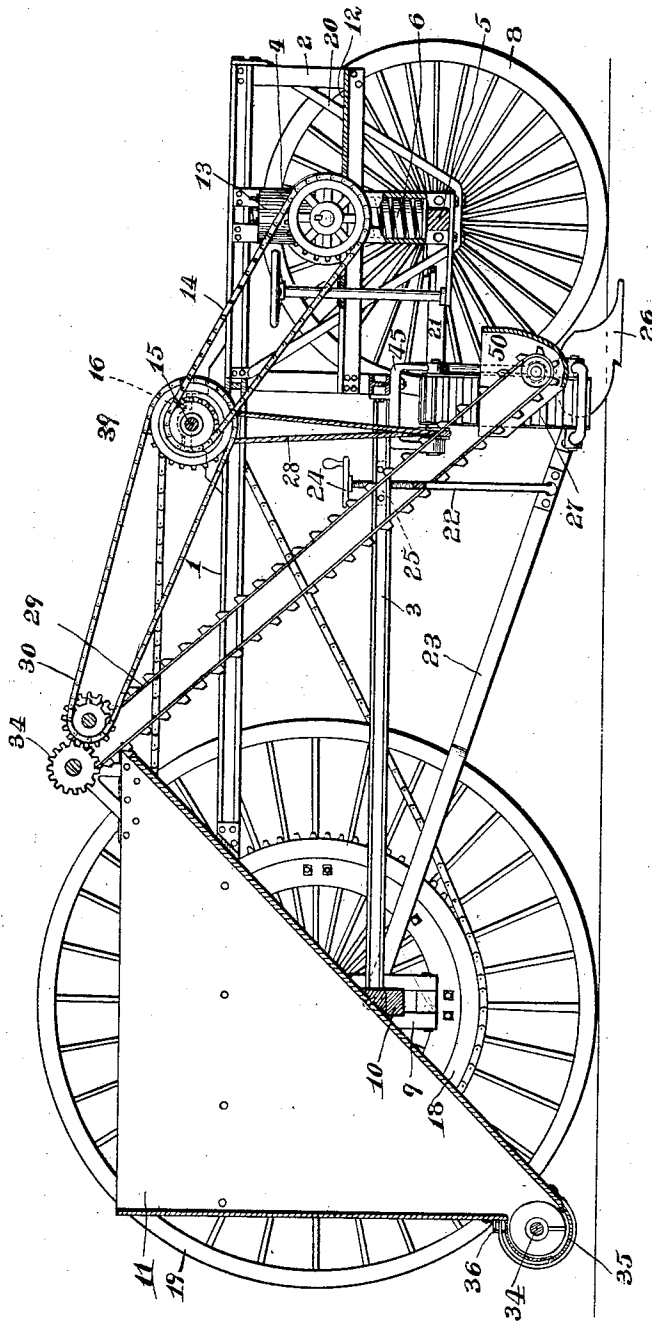


Fig. 3.

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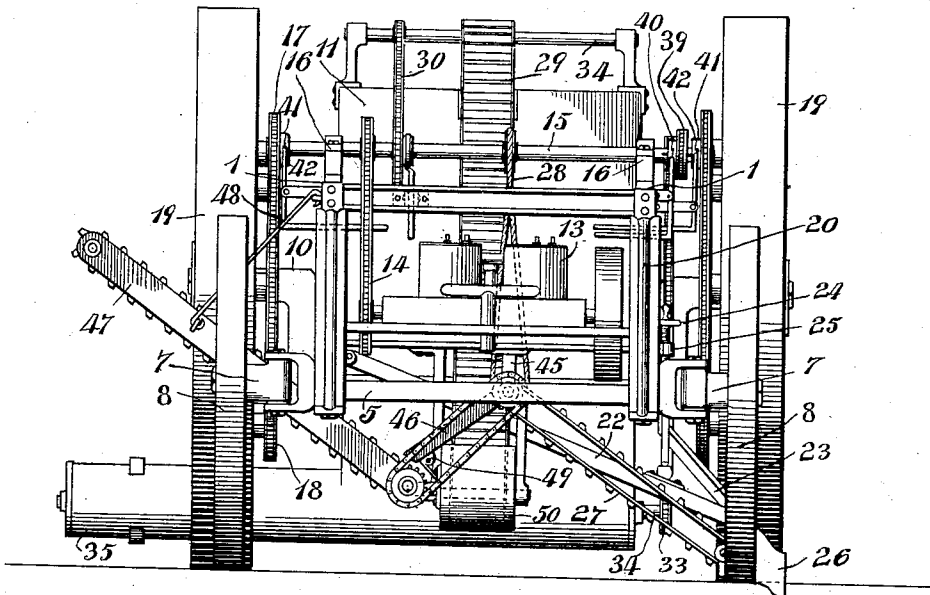


Fig. 4.

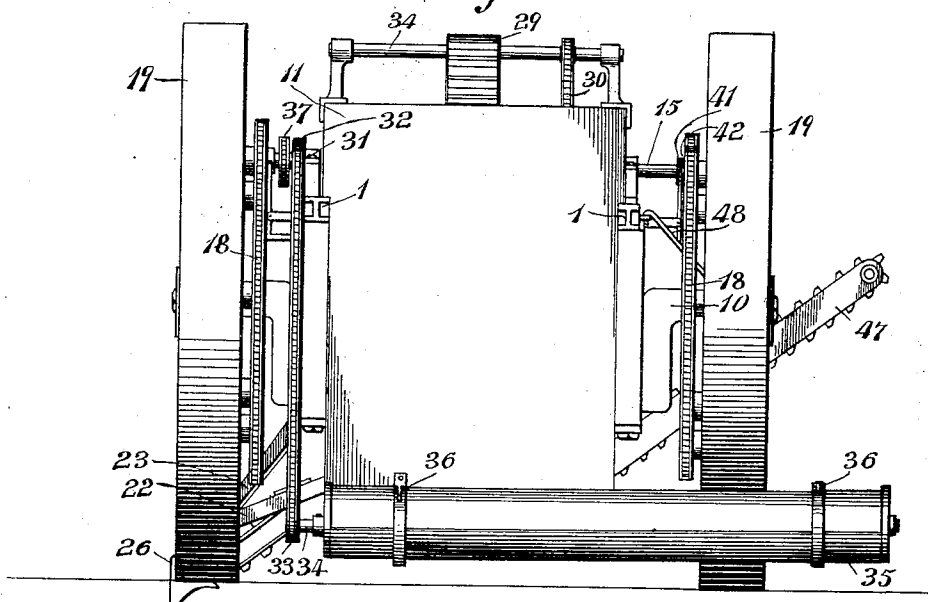


Fig. 5.

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UNITED STATES PATENT OFFICE.

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COMBINED DITCHING AND GRADING MACHINE.

1,043,610.

Specification of Letters Patent.

Patented Nov. 5, 1912

Application filed April 1, 1911. Serial No. 618,304.

To all whom it may concern:

Be it known that I, ERNEST W. LILLY, a citizen of the United States, residing at Menlo, in the county of Pacific and State of Washington, have invented new and useful Improvements in Combined Ditching and Grading Machines, of which the following is a specification.

This invention relates to graders and more particularly to combined ditchers and graders.

The object of the invention is the provision of a ditching machine carrying conveyers and distributors which may be operated to distribute the dirt as it is removed from the ditches or whereby the machine may be utilized for ditching and distributing at some distance from the ditch, for instance a dump removed from the scene of ditching.

Further objects of the invention will appear as the following specific description is read in connection with the accompanying drawings, which form a part of this application, and in which:—

Figure 1 is a side elevation of the machine with the pivoted shield and main conveyers omitted for clearness. Fig. 2 is a top plan view. Fig. 3 is a longitudinal vertical section. Fig. 4 is a front elevation. Fig. 5 is a rear elevation.

Referring more particularly to the drawing, 1 represents the main frame which is preferably rectangular in outline and has depending therefrom members 2 and 3 which constitute an auxiliary frame and which are supplied for the purpose of bracing and otherwise reinforcing the main frame.

Secured to the auxiliary and main frames on opposite sides thereof are the guiding uprights 4 in which the front axle 5 is adapted to move against the tension of the equalizing springs 6. The axle is preferably formed with pivoted stub ends 7 upon which the wheels 8 are journaled and so that the same may be turned in the manner of automobiles. At the opposite end of the frame uprights 9 are provided in which the rear axle 10 is mounted. This axle is of the drop type so as to accommodate the hopper 11 which is secured in the frame and extends downwardly on an angle from a point forward and above the axle to a point below and in the rear of the axle.

Mounted upon the main frame 1, above the axle 5, is a platform 12 upon which an

internal combustion engine or other type of motor 13 is mounted. This engine is connected in any suitable manner, as by means of a chain 14 as shown to a drive shaft 1 journaled in bearings 16 upon the frame, and carrying a sprocket wheel 17 which is connected to somewhat larger sprockets 1 mounted upon the rear wheels 19 which are journaled upon the axle 10. In this manner the vehicle is driven and steered over the ground.

The uprights 4 are braced by diagonal struts 20 which are connected to the frame and extend from the uprights and connected to one of the uprights 2 is a horizontal brace 3 from which a transverse brace 2 is suspended. This brace is pivotally connected at its lower end to the plow beam 2 which is in turn pivoted at the lower end of the uprights 9 and is adapted to have its plow carrying end moved vertically by the adjusting screw 24 which is mounted in bearings 25 carried by the auxiliary frame member 3 and its lower end is pivotally connected to the plow beam 23. The brace 22 holds the plow beam in proper position with relation to the supporting wheels and the screw 24 regulates the depth of cut. The plow 26 holds the plow 26 out of engagement with the ground when the machine is being carried from place to place.

Carried by the plow beam and movable vertically therewith is a relatively wide receiving conveyer 27 which is driven by cable 28 which runs over a sprocket wheel on the shaft 15. This conveyer receives the dirt turned up by the plow and feeds it to the main conveyer 29 which delivers the dirt received thereon to the hopper 11 and is driven through a chain 30 by the shaft 15. The conveyer 27 is adapted to carry the dirt to the main conveyer at a speed 5% greater than the feed from the plow so that the main conveyer may take off the dirt from the receiving conveyer and deposit it in the hopper without causing any delay.

Mounted upon bearings secured to the uprights 9 is a stub shaft 31 upon which a sprocket wheel 32 is journaled. This sprocket wheel is connected with a similar sprocket wheel 33 upon the end of the screw conveyer shaft 34 which is operatively mounted in the contracted lower end of the hopper 11. When the screw conveyer is in motion the dirt deposited in the hopper is held therein by means of a rotatably non-

ed shield 35 which may be thrown out of and held in inoperative position by a catch 36. The stub shaft also has journaled thereon a sprocket wheel 37 which is rigidly connected to the sprocket 32 and this latter sprocket 37 is connected by a chain 38 to a sprocket wheel 39 which is loosely mounted upon the shaft 15 and is thrown into engagement with a clutch member 40 when it is desired to operate the conveyer shaft 34. It will therefore be seen that the machine may be operated and the hopper completely filled with dirt which may be transported to a dump or other suitable point when the screw conveyer may be operated so as to distribute the dirt over an area equal to the width of the machine. In order to accomplish this without at the same time driving the machine the sprocket wheel 17 is preferably loosely mounted upon the shaft and provided with a clutch member 41 which is adapted to be engaged by a similar clutch member 42 splined upon the shaft. By throwing the clutch member 42 out of engagement the screw shaft may be operated independently of the machine or by throwing the clutch member out of engagement with the sprocket 39 the machine may be operated independently of the screw conveyer. It will be readily understood how both may be operated simultaneously so that in grading a road or the like a ditch may be cut upon the side and the dirt taken out of the ditch equally distributed upon the road.

Resting upon the bracket 45 which supports the upper end of the receiving conveyer 27 is a pivoted shield 46 which shunts the dirt away from the main conveyer 47 arranged upon the opposite side of the machine and supported by the hooks 48 in such a position as to deliver the dirt to a wagon running along the side of the machine. This plate is shown pivoted upon arms 49 which also support the receiving hopper 50 which surrounds the lower end of the main conveyer 29, the same also being supported by the arms 49, and, when thrown into operative position, rests against the bracket 45 and, when in inoperative position, lies upon the top of the conveyer 47.

Having thus described the invention, what I claim as new, is:—

1. In a machine of the class described, the combination with a frame and supporting wheels therefor, of a plow, a feeding conveyer arranged adjacent thereto, a hopper,

means for conducting the material from the feeding conveyer to the hopper, a lateral discharge conveyer, and means for shunting the material from the hopper conducting means to the lateral conveyer.

2. In a machine of the character described, the combination with a frame and supporting wheels therefor, of a plow, a hopper, means for conducting the material from the plow to the hopper, a lateral conveyer, means for shunting the material to the lateral conveyer and for discharging it outside of the hopper, and means for driving the machine.

3. In a machine of the character described, the combination with a frame and supporting wheels therefor, of a plow, a hopper, a receiving conveyer arranged to receive the material from the plow, a discharge conveyer for carrying the material from the receiving conveyer to the hopper, a lateral conveyer, means for shunting the material from the feeding conveyer past the discharge conveyer to the lateral conveyer, and means for driving said machine and conveyers.

4. In a machine of the character described, the combination with a frame and supporting wheels therefor, of a plow, a hopper, a receiving conveyer arranged to receive the material from the plow, a discharge conveyer for carrying the material from the receiving conveyer to the hopper, a lateral conveyer, a shield for shunting the material from the feeding conveyer past the discharge conveyer to the lateral conveyer, and driving means for the said machine and conveyers.

5. In a machine of the character described, the combination with a frame and supporting wheels therefor, of a plow, a receiving conveyer arranged to receive the material from the plow, a receiving hopper to receive material from the receiving conveyer, a hopper, a discharge conveyer for carrying the material from the receiving hopper to the said hopper, a lateral conveyer, means for shunting the material from the feeding conveyer past the discharge conveyer to the lateral conveyer, and driving means for said machine and conveyers.

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

ERNEST W. LILLY.

Witnesses:

M. A. HOAGLAND,
J. J. HEATH.