

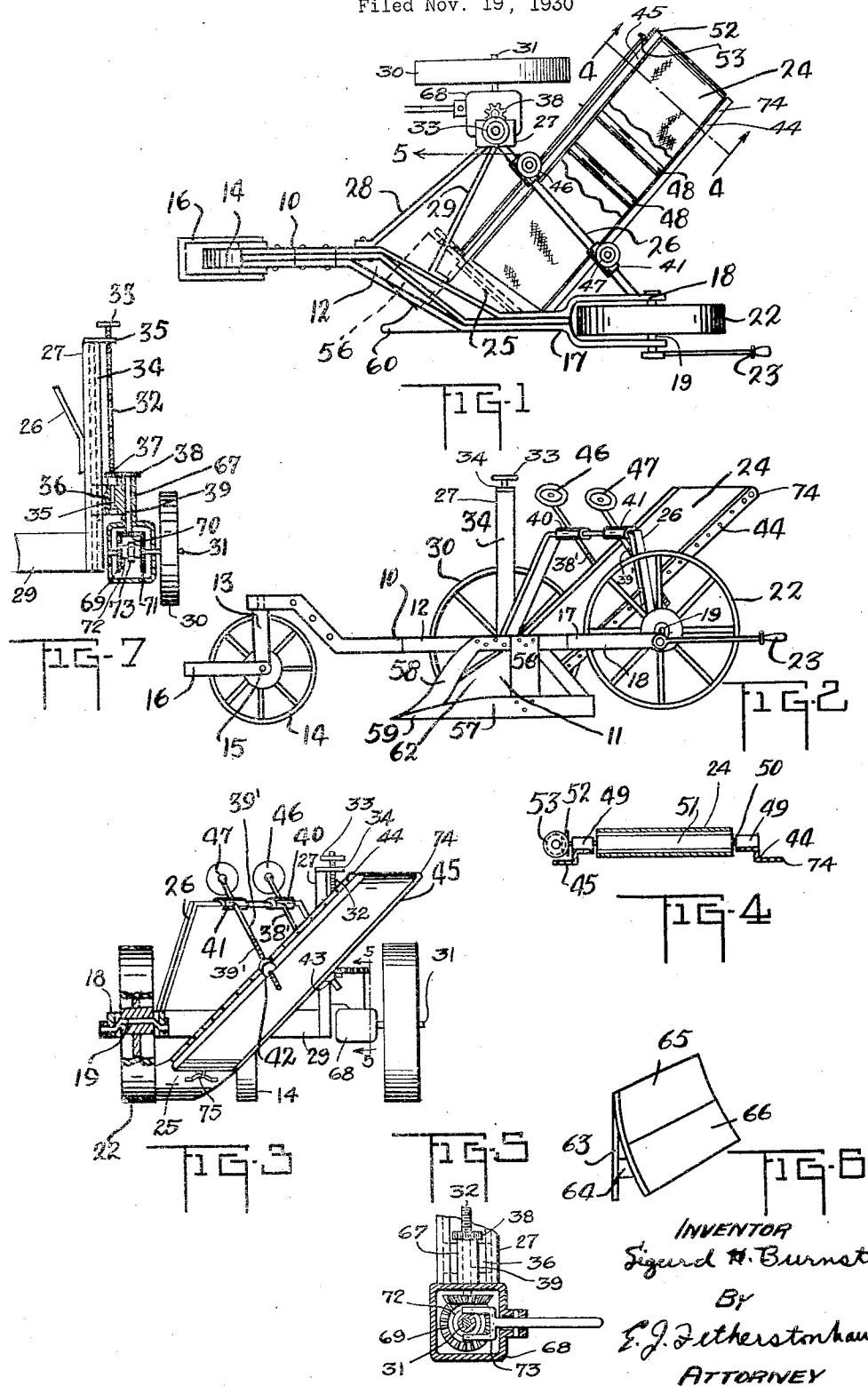
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ROAD GRADING AND DITCHING MACHINE

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UNITED STATES PATENT OFFICE

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ROAD GRADING AND DITCHING MACHINE

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The invention relates to a road grading and ditching machine, as described in the present specification and illustrated in the accompanying drawing that forms part of 5 the same.

The invention consists essentially of the novel construction of the vehicle and the operating parts incidental thereto as pointed out in the claims for novelty following the 10 description in detail of the preferred construction.

The objects of the invention are to eliminate many of the structural features common to road machines and thereby effect concentration of the essential parts and a very considerable reduction of weight without in any way endangering the efficiency of the machine; to facilitate the construction of roads by the rapid grading accomplished 15 with this machine at the minimum expenditure of power; to maintain a constant delivery of earth in the direction desired and in this connection insure the adjustability of the discharge conveyer in order to free the 20 passage of the machine over bridges and through cuts and tunnels; to regulate the level of the machine frame carrying the conveying apparatus in relation to the running gear, so that notwithstanding the hummocks, 25 holes and ruts the operating parts will remain practically undisturbed; to establish cutting and directing parts for different classifications of soil and in that way greatly increase despatch in working the looser earth 30 and in more difficult ground keep well over the average in so far as the quantities of earth removed; and generally to provide in road building a grader of light construction requiring hauling power of moderate strength 35 and yet durable and effective.

In the drawing, Figure 1 is a plan view of the road-builder with the conveyer belt partly broken away.

Figure 2 is a side elevational view of the 45 road machine.

Figure 3 is a rear elevational view of the road machine.

Figure 4 is a sectional view of the conveyer belt taken on the line 4—4 in Figure 1.

Figure 5 is a sectional view taken on the line 5—5 in Figure 3.

Figure 6 is a plan view of a modified form of plow assembly.

Figure 7 is a sectional detail of the side 55 wheel adjusting mechanism.

Like numerals of reference indicate corresponding parts throughout the various figures.

Referring to the drawing, the main frame 60 10 forms the plow beam to which the plow assembly 11 is attached. The main frame 10 is formed of a plurality of bars, bolted or riveted together and offset at 12. The front of the frame 10 is mounted on the swivel 65 bearing 13 for the front wheel 14 mounted on the axle 15. The clevis 16 is secured to the bearing member 13. The rear end of the frame 10 is spread at 17 to form the fork 18. The crank shaped axle 19 is journaled 70 in the fork 18 and the rear or hand wheel 22 is mounted thereon. The hand lever 23 is rigidly secured to the end of the axle 19, and by operating this lever the axle 19 is rotated and this raises or lowers the plow 75 assembly 11.

An endless conveyer structure 74 is secured by a loose connection 75 to the rear end of the mold board 25 extending from the plowshare 60.

The endless conveyer structure is supported by the saddle frame 26 rigidly secured to the frame 10 and to the extension side frame formed of the T-slotted guide plate 27 and transverse brace rods 28 and 29.

The mid-side wheel 30 is mounted on the axle 31 and is adjustable vertically by the screw 32 operated by the wheel 33. The screw 32 is mounted in the plate 34 and is held in position by the head 35 swivelled in 90 the bracket 36 slidably mounted on the T-slotted guide plate 27.

When the machine is drawn; the traction power, applied to the drawbar or clevis 16, is used through the rotation of the mid-wheel 95 30, to adjust vertically said wheel 30; in this case the screw is operated by the coacting gears 37 and 38, the gear 37 being mounted on the screw 32 and the gear 38 being mounted on the shaft 39 journaled in the bearing 100

67 forming part of the bracket 36 and extending from the double clutch housing 68 enclosing the coacting gears 69, 70 and 71, the gear 70 being at the lower end of the 5 shaft 39 and the gears 69 and 71 being mounted on the axle 31, and forming clutch members with the coacting double clutch member 72 operated by the fork 73 connected to a suitable hand lever.

10 The conveyer structure 74 is raised and lowered by the screws 38' and 39' which are carried in the bushings 40 and 41 on the saddle frame 26 and extend through the screw threaded blocks 42 and 43. The screw threaded blocks 42 and 43 are secured to the side members 44 and 45 of the conveyer structure 74 and the hand wheels 46 and 47 are attached to the screws 38' and 39' respectively, thus in turning these wheels the conveyer 15 structure is raised or lowered.

20 It will thus be seen that one side of the conveyer structure can be raised independent of the other side and this enables the operator to keep the surface of the belt 24 horizontal, regardless of the position of the land and side wheels. The bushings 40 and 41 are 25 slidably carried on the saddle frame 26 to enable the belt to be swung inwardly or outwardly depending on where the earth is to 30 be deposited.

35 The conveyer belt 24 is carried on rollers 48 which are carried in bearings 49 secured to the side members 44 and 45 of the conveyer structure 74 and the shaft 50 carries the driving end roller 51 which has the bevel gear 52 secured to one end and this bevel gear 52 meshes with the gear 53 and is carried by the shaft 54, which is suitably driven by a motor 56' positioned on the frame 10.

40 The plow assembly has the standard 56 to which the landside 57 is attached. A coulter 58 is secured to the forward end 59 of the landside 57 and extends upwardly to the beam 10 to which it is rigidly bolted or otherwise secured. The plow has the share 60 and the moldboard 25. A side wall 62 is formed on the moldboard and acts as an earth guide to the lower end of the conveyer belt.

45 In Figure 6 a modified form of plow assembly is shown in which 63 is the landside secured to the standard 64, the share 65 is attached to the land side and the moldboard 66 is positioned adjacent the share.

50 It will be noted that the angle on the face of the share is in the reverse as to what is done in ordinary practice. This enables the use of a moldboard having a surface approximately rectangular in shape and eliminates the sharp curve usual to moldboards and 55 greatly facilitates the raising of the earth onto the conveyor belt.

60 In the operation of the machine, a tractor or other source of motive power is attached to the drawbar 16, and the road machine 65 pulled forwardly. The lever 23 is placed

in the position as shown in Figures 1 and 2, this lowers the plow into the ground and the earth when dug travels up on the moldboard and onto the conveyer belt 24.

65 The belt 24 is being rotated by the motor and deposits the earth to one side and to the rear of the machine. When approaching bridges and other obstructions the end of the belt can be swung inwardly to clear the bridge, thus allowing the roadbuilder to pass 70 over the bridge without dismantling the road builder in any manner. This machine pivots easily on its three wheels making it possible to turn around in a small radius. When moving the machine from place to place the 75 hand lever 23 is moved forward, this rotates the crank axle 19 and raises the plowshare off the ground, at the same time the wheel 30 may be lowered to raise that side of the 80 machine so that there will be no possibility 85 of damaging the plow when not in use.

What I claim is:—

1. In road grading and ditching machines, a vehicle frame, running gear formed of a 90 midside wheel, a rear land wheel and a dirigible front wheel, a plowshare and moldboard, a conveyer structure mounted on said frame in line with said moldboard and horizontally and vertically adjustable and adjusting means for said midside wheel, comprising a screw actuated by co-acting gears, a clutch means between two of said gears and a control lever for said clutch means.

2. In road grading and ditching machines, a vehicle frame, running gear formed of an 100 adjustable midside wheel, a dirigible front wheel and a rear land wheel, said rear land wheel being carried on a crank shaped axle, a control lever mounted on said axle, a plowshare and moldboard, a conveyer structure mounted on said frame in line with said moldboard and horizontally and vertically 105 adjustable.

3. In road grading and ditching machines, a vehicle frame, running gear formed of an 110 adjustable midside wheel, a dirigible front wheel and a rear land wheel, said rear land wheel being carried on a crank shaped axle, a control lever mounted on said axle, a plowshare and moldboard, a conveyer structure mounted on said frame in line with said moldboard and horizontally and vertically adjustable, and adjusting means for said midside 115 wheel comprising a screw actuated by co-acting gears, a clutch means between two of said gears and a control lever for said clutch means.

4. In road grading and ditching machines, a vehicle comprising a frame mounted on front and rear wheels and having a side extension mounted on an adjustable wheel, a saddle frame transversely and rigidly secured on said frame and extension, bushings slidably mounted on said saddle frame, a plowshare and moldboard rigidly secured to 120

the main frame, and a conveyer belt structure supported by screws carried in said bushings and having a driven belt extending under the inner end of said moldboard.

5 5. In road grading and ditching machines, a vehicle frame, running gear formed of a midside wheel, a rear land wheel and a dirigible front wheel, a plowshare and moldboard, a conveyer structure mounted on said frame in line with said moldboard and horizontally and vertically adjustable and adjusting means for said midside wheel, said means consisting of a transverse saddle frame, bushings slidably mounted on said saddle frame, threaded rods extending through said bushings and engaging with screw threaded lugs on said conveyer structure and hand wheels on said threaded rods.

10 6. In road grading and ditching machines, a vehicle frame, running gear formed of an adjustable midside wheel, a dirigible front wheel and a rear land wheel, said rear land wheel being carried on a crank shaped axle, a control lever mounted on said axle, a plowshare and moldboard, a conveyer structure comprising a frame, rollers mounted between said frame and an endless belt carried by said rollers, said conveyer structure being mounted on said frame in line

15 with said moldboard and horizontally and vertically adjustable, and adjusting means for said midside wheel comprising a screw actuated by coacting gears, a clutch means between two of said gears and a control lever

20 for said clutch means.

25 Signed at the city of Ottawa, Province of Ontario, Dominion of Canada, this 7th day of October 1930.

30 SIGURD HANS BURNSTAD.

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