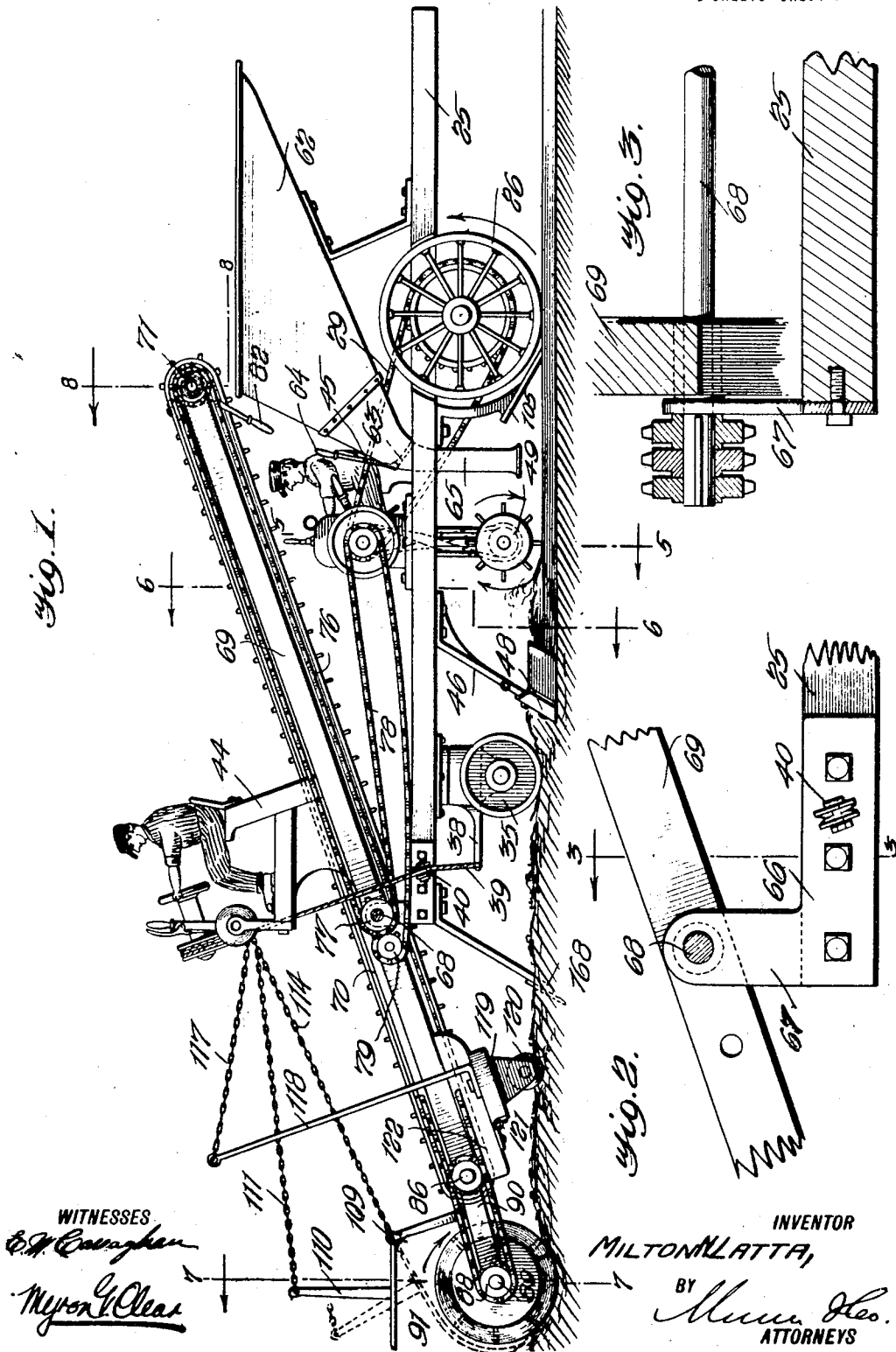


M. N. LATTA.
ROAD MAKING MACHINE.
APPLICATION FILED OCT. 31, 1917.

1,269,098.

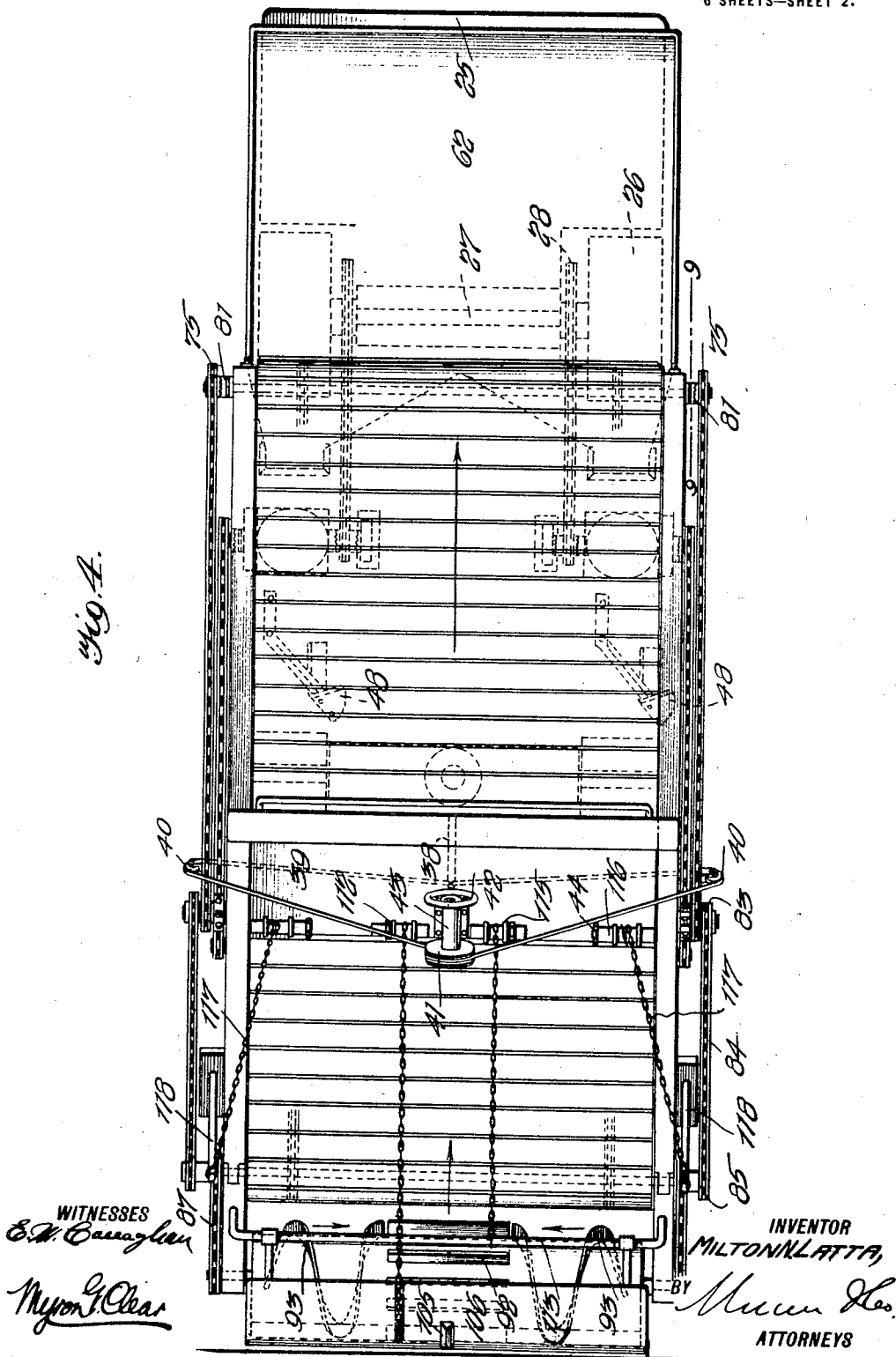
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6 SHEETS—SHEET 1.



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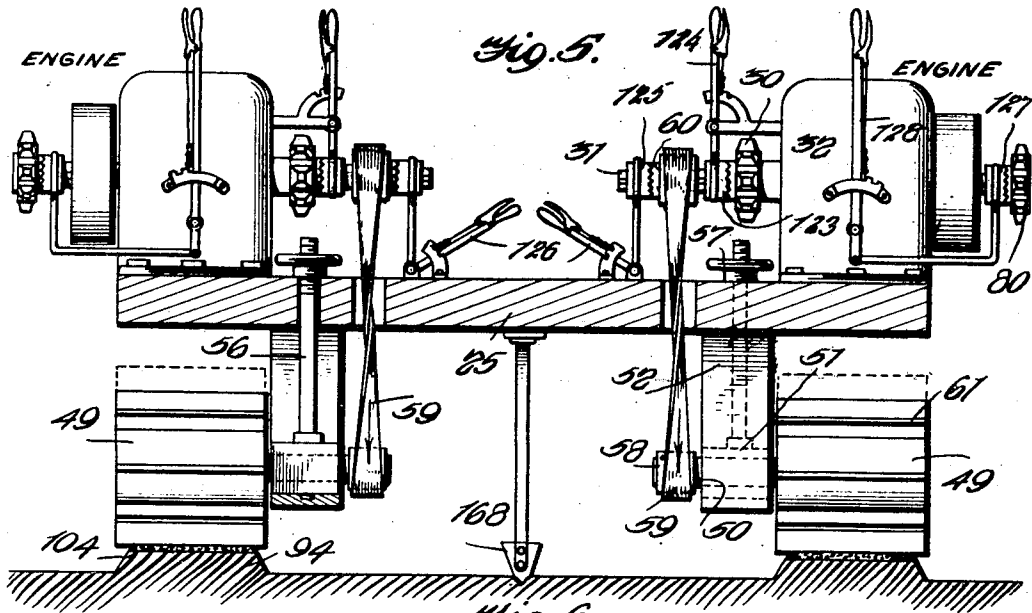
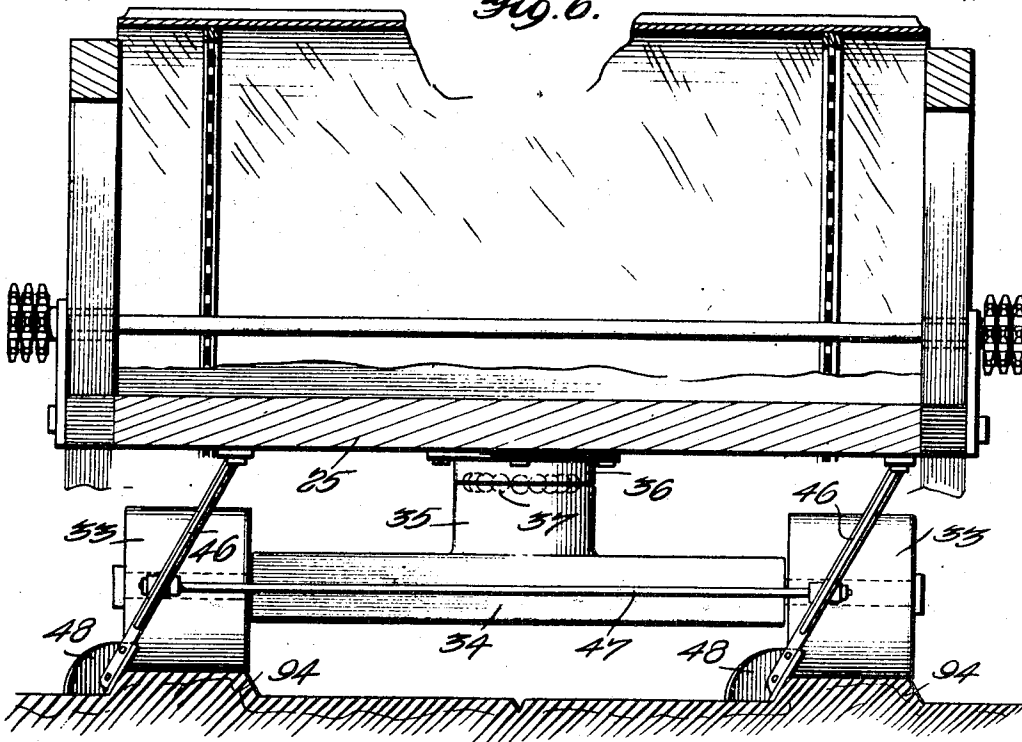


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6 SHEETS—SHEET 3.



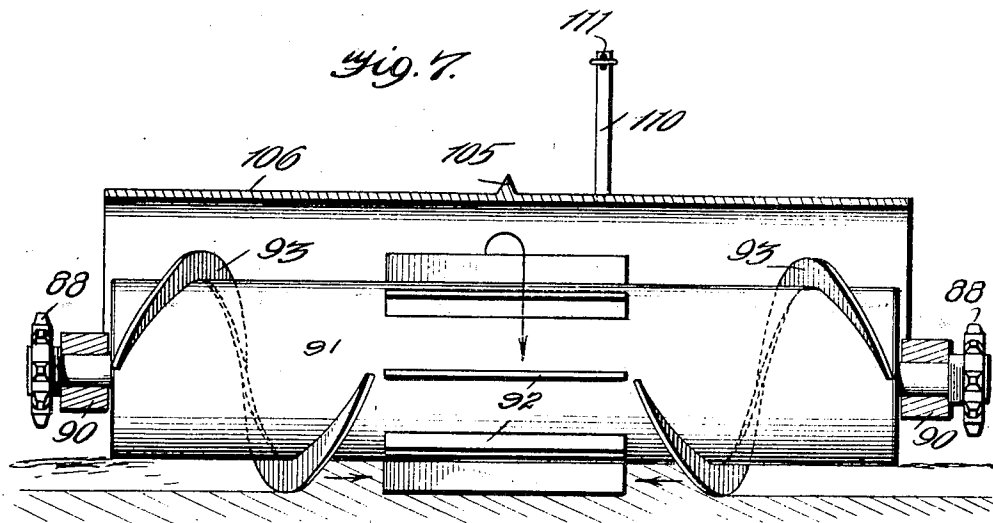
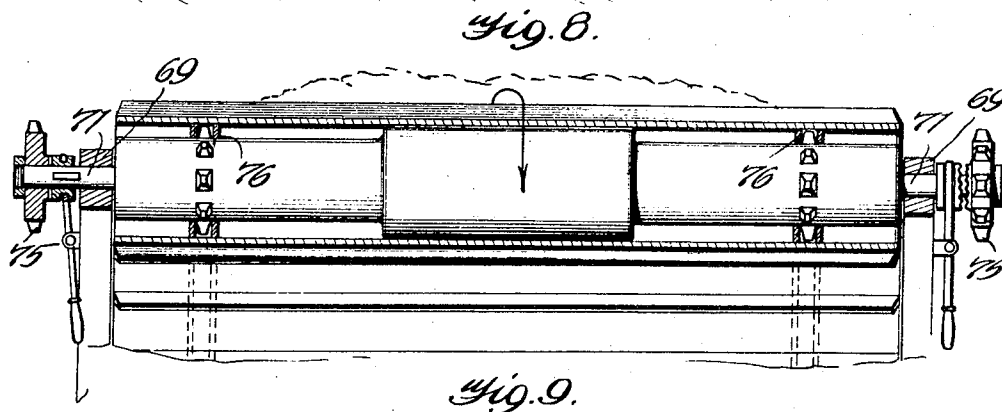
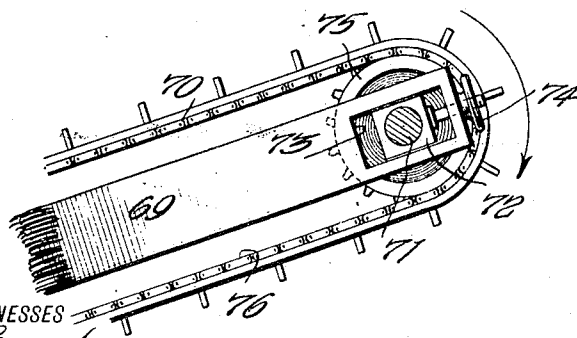
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6 SHEETS—SHEET 4.



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6 SHEETS—SHEET 5.

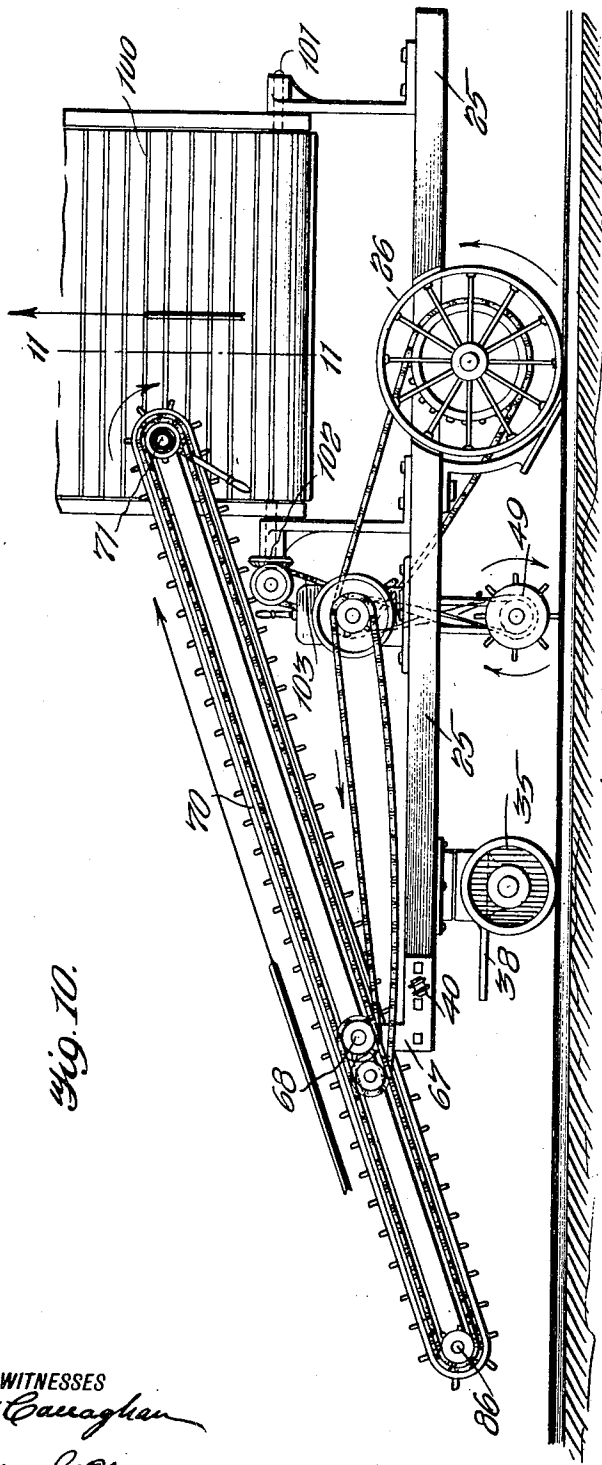
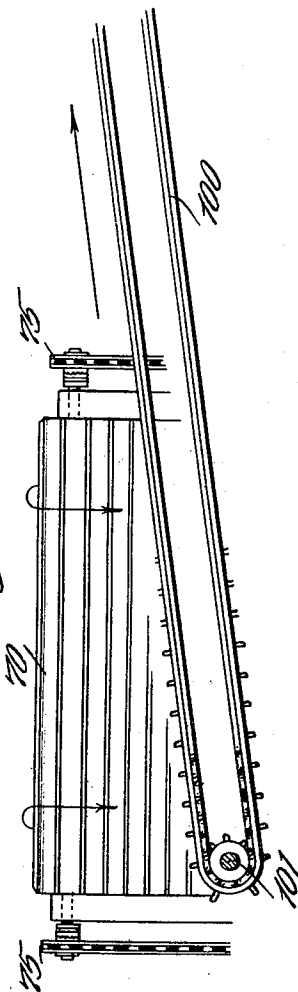


Fig. 10.

Fig. 11.



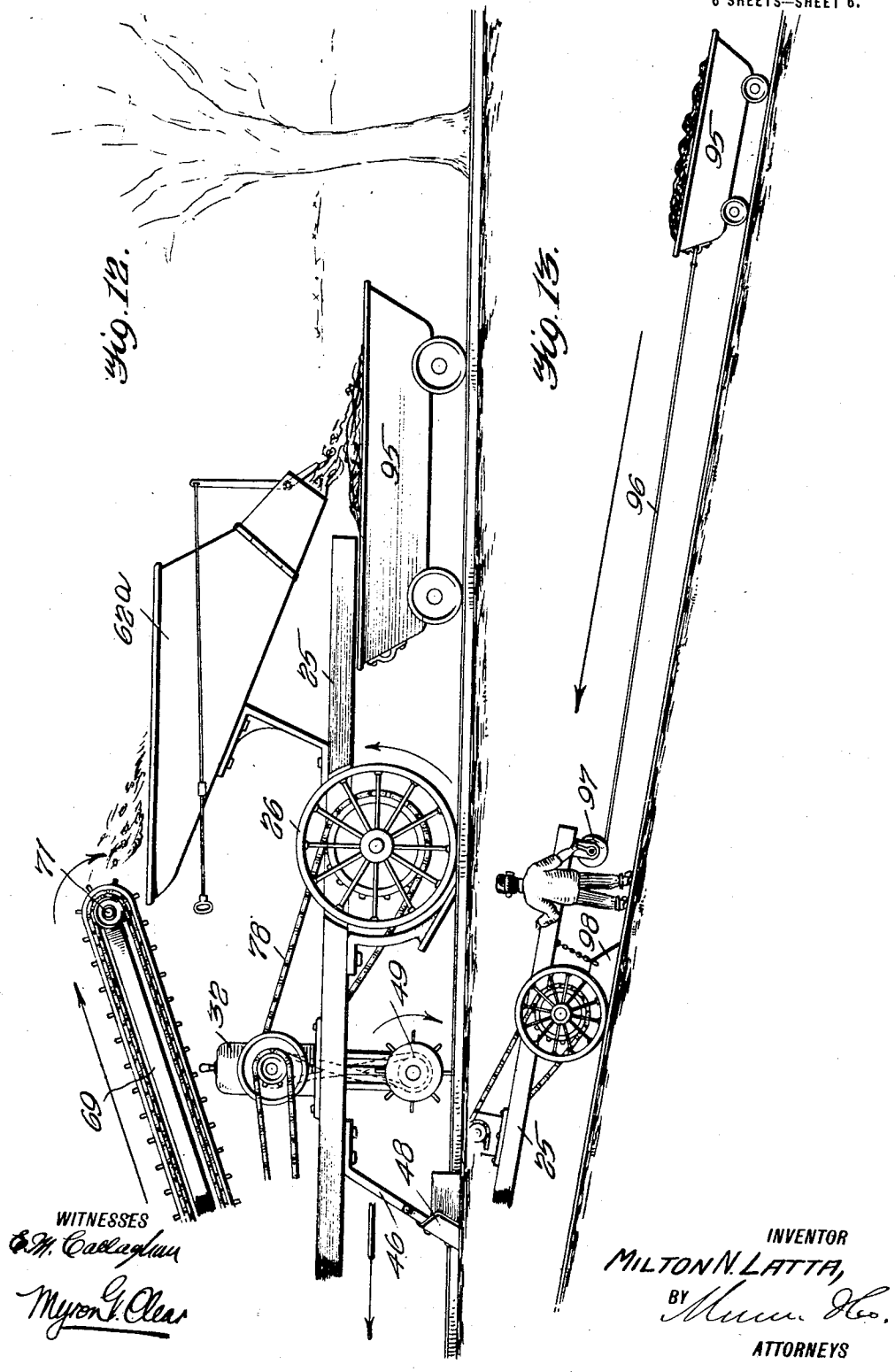
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6 SHEETS—SHEET 6.



UNITED STATES PATENT OFFICE.

MILTON NIMMON LATTA, OF VALENTINE, NEBRASKA.

ROAD-MAKING MACHINE.

1,269,098.

Specification of Letters Patent. Patented June 11, 1918.

Application filed October 31, 1917. Serial No. 199,536.

To all whom it may concern:

Be it known that I, MILTON NIMMON LATTA, a citizen of the United States, and a resident of Valentine, in the county of Cherry and State of Nebraska, have invented a certain new and useful Improvement in Road-Making Machines, of which the following is a specification.

My present invention relates generally to road making apparatus, and more particularly to roadway machines for forming roadways of the nature to be presently described, consisting of spaced elevated wheel tracks, my object being the provision generally of a machine movable along a selected roadway site capable of the formation of wheel tracks in the course of its movement, of the nature previously set forth.

A further object of my invention is to provide a machine capable of ready adjustment and interchange of parts for the several purposes to be hereinafter set forth, as well as the adjustment of the parts in use, and in its specific aspect contemplates the provision of the construction, arrangement and operation of parts to be hereinafter described with respect to the accompanying drawings, the latter forming a part of this specification and including various figures, of which:

Figure 1 is a side elevation of the complete machine illustrating its practical application;

Fig. 2 is an enlarged side view of one of the track supports of the adjustable frame;

Fig. 3 is a partial vertical transverse section taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a top plan view of the complete machine;

Fig. 5 is a vertical transverse section taken substantially on line 5—5 of Fig. 1;

Fig. 6 is a similar view taken substantially on line 6—6 of Fig. 1;

Fig. 7 is another similar view taken substantially on line 7—7 of Fig. 1;

Fig. 8 is a detail vertical transverse section through the upper rear end of the conveyor, taken substantially on line 8—8 of Fig. 1;

Fig. 9 is a detail illustrating the possible adjustment of the conveyor;

Fig. 10 is a side view illustrating a modified form;

Fig. 11 is a vertical transverse section

taken substantially on line 11—11 of Fig. 10;

Fig. 12 is a side elevation illustrating another modified form;

Fig. 13 is a side view illustrating the use of a machine as a tractor having a dirt carrying trailer.

Referring now to these drawings, and particularly to Figs. 1 and 4, my improved machine includes a substantially rectangular main frame 25, the rear portion of which is supported by rear side wheels 26 of suitable width and diameter for the purpose to be presently described, the shaft 27 of which as seen in Fig. 4, is provided at the inner side of each of the wheels with a large sprocket 28 connected by a sprocket chain 29 with the sprocket 30 mounted loosely upon the shaft 31 of the respective side motor 32, there being two of these motors, as best seen in Fig. 5, in laterally spaced relation at a point substantially in the center of the main frame 25.

The forward portion of the main frame is supported upon similar side guiding wheels 33 on which, as best seen in Fig. 6, are mounted the reduced extremities of a forward axle 34, the latter having a central upright cylindrical member 35 opposing a securing member 36 of similar nature depending from the main frame 25 and between which are disposed anti-friction bearings 37. The front axle 34 also has a central forwardly projecting arm 38 to which the lower ends of guide cables 39 are attached, as best seen in Fig. 4, these guide cables extending laterally to the sides of the main frame and upwardly and centrally around side pulleys 40, with their upper ends extending in opposite directions around the pulley 41 of the steering shaft, having a hand wheel 42 and mounted in a bearing 43 centrally of the operator's platform 44. The main frame 25 forms a second operator's platform 45 in the rear of the motors 32, two operators being required, one to attend to the operation of the motors 32 and the other to the guiding of the vehicle and the adjustment of its adjustable operating parts to be hereinafter described.

Rearwardly of the forward steering wheels 33 the frame 25 has depending side plow beams 46, inclined as particularly seen in Fig. 6, and rigidly connected by a connecting bar 47, the lower ends of these beams

supporting plow points 48, the action of which is to throw up material along a path in the plane of one side of the rear wheels 26. Rearwardly of the plows 48 and between the same and the rear wheels 26, is a pair of leveling wheels 49, secured as seen in Fig. 5 upon the outer ends of independent short shafts 50, the latter of which are journaled in bearings 51 adjustable in the lower portion of depending brackets 52 of the main frame 25, and adjustment of which bearings is controlled by upright stems 56, the upper threaded ends of which are engaged by hand wheels 57 resting upon the upper surface of the main frame 25. The inner ends of the two short shafts 50 have pulleys 58 connected by twisted belts 59 with pulleys 60 loosely mounted upon the motor shafts 31, it being thus obvious that the leveling wheels 49 having the radially projecting transversely extending leveling plates 61, are thus rotated in directions relatively opposite to the direction of movement of the main frame.

Mounted above the rear portion of the main frame 25 is a hopper 62 having a valve 63 in its lower portion controlled by a handle 64 located adjacent the operator's platform 45 and having lower side feed chutes 65 depending through and below the main frame 25 in the space between the leveling wheels 49 and the rear traction wheels 26.

At its forward side portions the main frame 25 has angular brackets 66, the upright portions 67 of which form bearings revolubly supporting the outer ends of a transverse shaft 68, the latter extending through the side beams 69 of an inclined longitudinal conveyer 70, intermediate the forward and rear ends thereof and forming in addition to its other functions, a fulcrum upon which the conveyer may be adjusted, as presently described.

The conveyer 70 is of the endless belt type and is driven from its upper shaft 71, the latter of which may, as seen in Fig. 9, be mounted in adjustable journals 72 movable in the upper slotted portion 73 of the side bars 69 and controlled by hand wheels 74, the said upper shaft 71 having sprocket wheels 75 around which the upper ends of side chains 76 extend, the lower ends of these chains extending around pulleys 77 mounted upon the end portions of the shaft 68. The shaft 68 also has pulleys 77 mounted loosely upon its end portions and secured to the pulleys at the lower ends of chains 76, said pulleys 77 being engaged by the upper runs of side chains 78 extending at their forward ends around idler sprockets 79 mounted upon the side beams 69 and at their rear ends around sprockets 80 loosely disposed upon the outer ends of the motor shafts 31.

It will be noted that the upper driving sprockets 75 of the conveyer chains 76 are connected to the upper shaft 71 by clutches 81, the latter controlled by levers 82 projecting adjacent the operator's platform 45, so that motion of the endless conveyer 70 may be arrested independent of the driving connections 78 from the motors 32, by simply releasing the clutches 81.

Secured to the sprockets 77 are other sprockets 83 adjacent the opposite ends of the shaft 68 connected by side chains 84 with sprockets 85 loosely disposed upon the outer ends of the lower forward shaft 86 of the conveyer 70, and secured in turn to sprockets connected by chains 87, the forward ends of which engage sprockets 88 mounted upon the ends of a shaft 89 journaled at the forward ends of side bars 90.

The shaft 89 supports a cylindrical digging member 91 which may thus be driven through the connections described independent of movement of the conveyer 70, and which is in practice driven in a direction relatively opposite to that of the movement of the machine. This digging cylinder 91 has radially projecting blades 92 extending in an annular series around its central portion and disposed transversely of the machine, and is further provided with helical digging blades 93 around the end portions thereof at opposite sides of the blades 92, the action of which is to cut up the surface of the proposed roadway and force the material centrally toward the series of blades 92. In operation these blades 92, besides cutting the surface, pick up the material and throw the same upwardly and rearwardly upon the lower forward end of the conveyer 70 and the latter carries the material upwardly under certain conditions and deposits the same in the hopper 62 above which its outer rear end terminates. The material so disposed in the hopper may be utilized to supplement the material thrown up in the two spaced tracks 94, as seen in Fig. 6, by the plows 48, or if sufficient material is being thrown up by the plows, the material carried upwardly and rearwardly by the conveyer 70 may be stored in the hopper 62, or by reversing the latter, as shown in Fig. 12, where the hopper is indicated at 62^a and by removal of its discharge spout 65 the material may be dumped into a receiving car 95 carried as a trailer and attached in any suitable manner to the rear portion of the main frame 25.

As seen in Fig. 13 the trailer 95 may be attached by a cable 96 wound upon a drum 97 at the lower rear portion of the main frame 25, the latter of which has suspended blocks 98 for chocking the rear traction wheels 26. Thus, when it is necessary for the machine to proceed upwardly in hilly country the trailer may be blocked and the

machine proceed independently thereof for some distance, regulated of course by the length of the cable 96, the machine being then stopped and blocked, and the drum 97 rotated to draw the trailer 95 up to the machine. In this way, by successive stages both the machine and its trailer may be permitted to operate upon steep grades. For the above purpose the rear traction wheels 26 may, if so desired, be provided with suitable anti-skid devices, as for instance non-skid chains 99, as seen in Figs. 14 and 15.

As seen in Figs. 10 and 11, in which the digging cylinder 91 and its parts have been removed, the upper end of the conveyer 70 may discharge near the lower end of a laterally and upwardly inclined conveyer 100, the function of which is to discharge the material thrown rearwardly by the digging cylinder at one side of the roadway, for which purpose the lower shaft 101 of the said lateral conveyer 100 may be connected by gears 102 and a sprocket chain 103 to the shaft of one of the motors 32.

It is understood that in proceeding initially along the selected roadway site, the parts are adjusted to the operative positions shown in Fig. 1, with the digging cylinder 91 in operation, the plows 48 finishing one side of the spaced tracks 94 which are leveled by leveling wheels 49 and pressed and packed by the traction wheels 26.

The machine then proceeds in the opposite direction so that the plows 48 will finish the opposite sides of the track and during its return movement the digging cylinder 91 is elevated by the means to be presently described in order to render it inactive. During its return movement, furthermore, any suitable trackway surface, as for instance special sand, gravel, and the like, seen at 104 in Fig. 5, may be disposed upon the elevated trackways 94 by the discharge spouts 65 of the hopper 62, the latter being previously supplied with such surface mixture. This surface mixture is leveled by scrapers 105 in advance of the rear traction wheels 26, and is then pressed flat as seen in Fig. 5 by such traction wheels.

During this return movement the machine is properly guided, furthermore, by the operator upon the platform 44 having as his guide a slight member 105 located upon a forward shield 106, which is alined in operation with the vertical guide groove 107 centrally between the elevated trackways 94 made by a depending grooving plow 168 extending downwardly from the main frame 25, centrally of the forward end of the latter.

The shield 106 is pivotally mounted at its rear end upon a pair of uprights 109 extending upwardly from the side bars 90, supporting shaft 89 of the digging cylinder

91, and is in turn provided with an upright arm 110, the upper end of the latter of which is connected by a controlling connection shown in the form of a chain in Fig. 1, with the drum 112 mounted upon the operator's platform 44 and having a hand control. The uprights 109 of the side bars 90 have a connecting member 113 as seen in Fig. 4, similarly connected by a chain 114 to another drum 115 upon the operator's platform 44, and the latter of which also has drums 116 adjacent its opposite sides connected by chains 117 to the upper ends of uprights 118, the lower ends of which are secured upon a lower roller-carrying frame 119, the rollers of which appear at 120. This frame 119 extends transversely beneath the lower forward portion of the conveyer 80, and is hingedly connected at its forward portion by hinges 121, to members 122 connected to the lower portions of the side bars 69 of the said conveyer.

Thus, by shortening the connections 111, 114, and 117, the shield 106, digging cylinder 91, and the lower forward portion of the conveyer may be elevated, the movement of the digging frame being upon the shaft 86 and the movement of the conveyer frame being upon the shaft 68.

Referring now to Fig. 5 it will be noted that the sprocket wheel 30 connected by sprocket chain 29 to the rear traction wheels 26, as seen in Fig. 1, is engaged with the motor shaft 31 through a splined clutch member 123 controlled by a lever 124, the pulley 60 of the leveling wheel 49 being similarly engaged with the shaft 31 by a clutch member 125 controlled by a lever 126. It will also be noted that the sprocket wheel 80 at each side connected by chains 78 to the sprocket 79 before mentioned and as also seen in Fig. 1 is engaged with the respective shaft 31 by a clutch member 127 controlled by a lever 128. In this way the control of the rotation of the several parts mentioned is within reach and ready manipulation of the operator stationed upon the operator's platform 45.

It is obvious from the foregoing that my invention provides an efficient apparatus for operation as described, in the formation of roads consisting of spaced elevated trackways, as well as a strong and durable machine which is capable of covering considerable mileage and embodies a mechanism susceptible of ready adjustment and interchange of parts.

I claim:

1. A machine of the character described, having a forward digging member, intermediate earth deflecting means arranged to throw loose earth into spaced parallel tracks, and rear pressure means for applying pressure upon the parallel earth tracks.

2. A machine of the character described,

having forward digging means, intermediate earth deflecting means arranged to throw loose earth upwardly at the sides of the machine, leveling means for leveling the earth thrown up by the deflecting means, and rear pressure means for applying pressure upon the earth so thrown up and leveled.

3. A machine of the character described, comprising forward steering wheels and rear side traction wheels, plows carried thereby at the sides and forwardly of the rear traction wheels, rotating levelers alined with the said traction wheels between said plows and traction wheels, and means for adjusting the said levelers vertically.

4. A machine of the character described, comprising forward steering wheels and rear side traction wheels, plows carried thereby at the sides and forwardly of the rear traction wheels, and rotating levelers alined with said traction wheels between the said plows and traction wheels.

5. A machine of the character described, having rear side traction wheels, earth deflecting plows at the sides and forwardly of said traction wheels, and leveling members between the plows and traction wheels and alined with the latter, said leveling members being in the form of wheels having radial blades, and means for driving said wheels.

6. A machine of the character described, having rear side traction wheels, earth deflecting plows at the sides and forwardly of said traction wheels, leveling members between the plows and traction wheels and alined with the latter, said leveling members being in the form of wheels having radial blades, bearings in which said wheels are vertically adjustably mounted, and means for driving said wheels in directions opposite to the direction of movement of the machine.

7. A machine of the character described having forward and rear alined side wheels, digging means carried by and extending forwardly of the said machine forwardly of the front wheels, and means carried by the machine between the forward and rear wheels for deflecting earth into paths parallel to the paths of said wheels.

8. A machine of the character described having forward and rear wheels, and pro-

vided with earth throwing and leveling means between the wheels, and a hopper mounted upon the machine and having discharge spouts depending in front of the rear wheels, for the purpose described.

9. A machine of the character described having bearings at its forward portion, a conveyer frame intermediately fulcrumed in said bearings, and adjustable vertically therein, and a digger frame pivotally connected to the forward end of said conveyer frame, a digging wheel journaled in the said digger frame, controlling connections for the said digger frame to adjust the latter independent of the conveyer frame, and controlling connections for adjusting the conveyer frame with the digger frame.

10. A machine of the character described having a conveyer frame intermediately fulcrumed at the forward portion thereof and extending forwardly therefrom, an endless conveyer in the said frame, a digging member carried by the forward portion of the frame and arranged to throw dug material upon the lower portion of the conveyer, a roller mounted support beneath the forward portion of the conveyer frame having hinged connection therewith and provided with uprights at the sides of the conveyer frame, and manually controlled connections joined to the said uprights whereby the forward portion of the conveyer frame may be raised and lowered.

11. A machine of the character described having at its forward end a conveyer frame, pivoted intermediate its ends and extending forwardly therefrom, a radial digging member at the forward portion of the conveyer frame, a conveyer carried by said conveyer frame, connections for driving said digging member, and said conveyer, and means for independently controlling the said driving connections whereby the digging member may be operated independently of the conveyer.

12. A machine of the character described having a forward radial digging cylinder extending transversely thereof, and the intermediate portion of which has radial digging blades, and the side portions of which have helical blades, for the purpose described.

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