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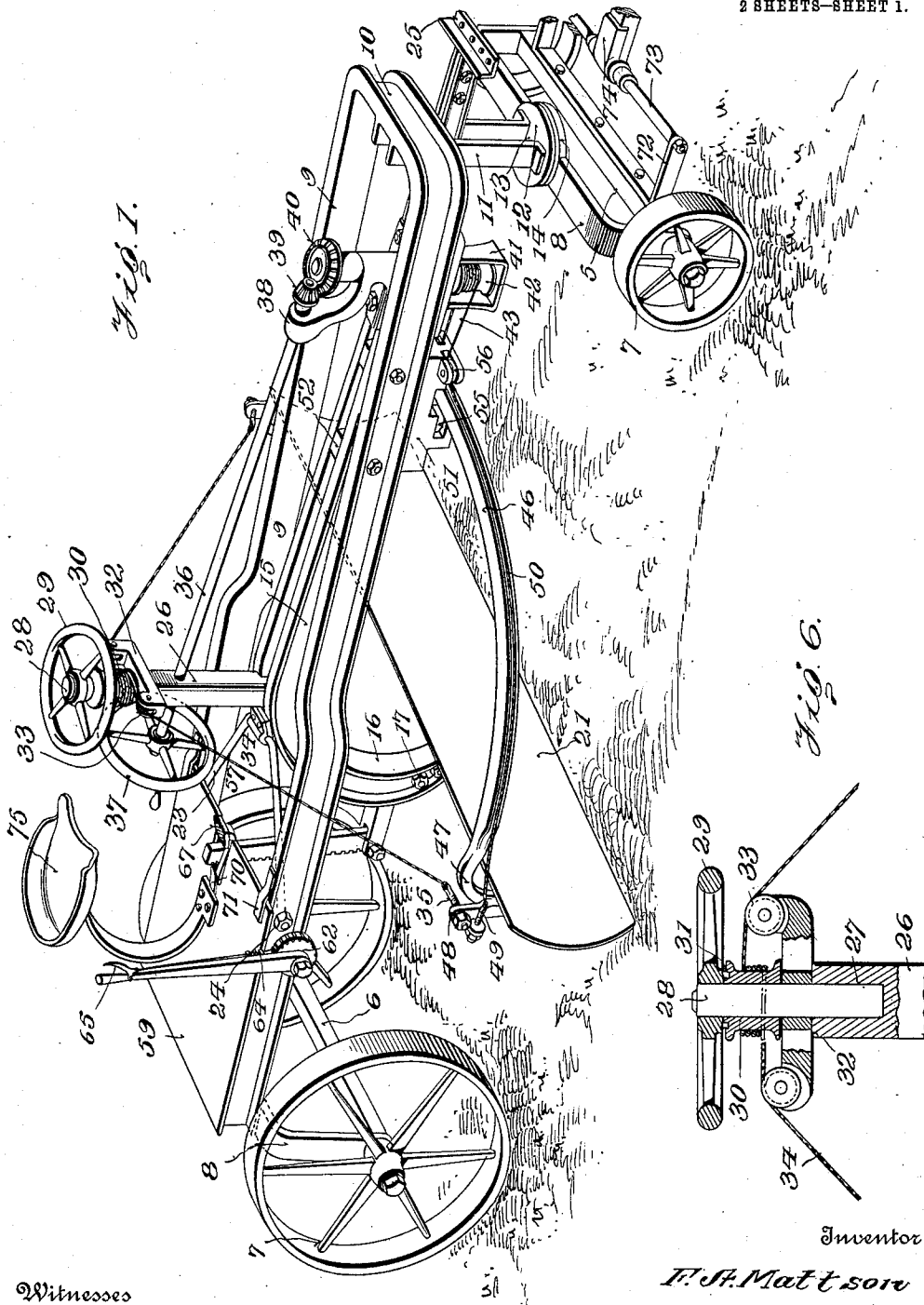
ROAD GRADER.

APPLICATION FILED MAY 25, 1910..

Patented Oct. 24, 1911.

2 SHEETS—SHEET 1.

1,006,576.



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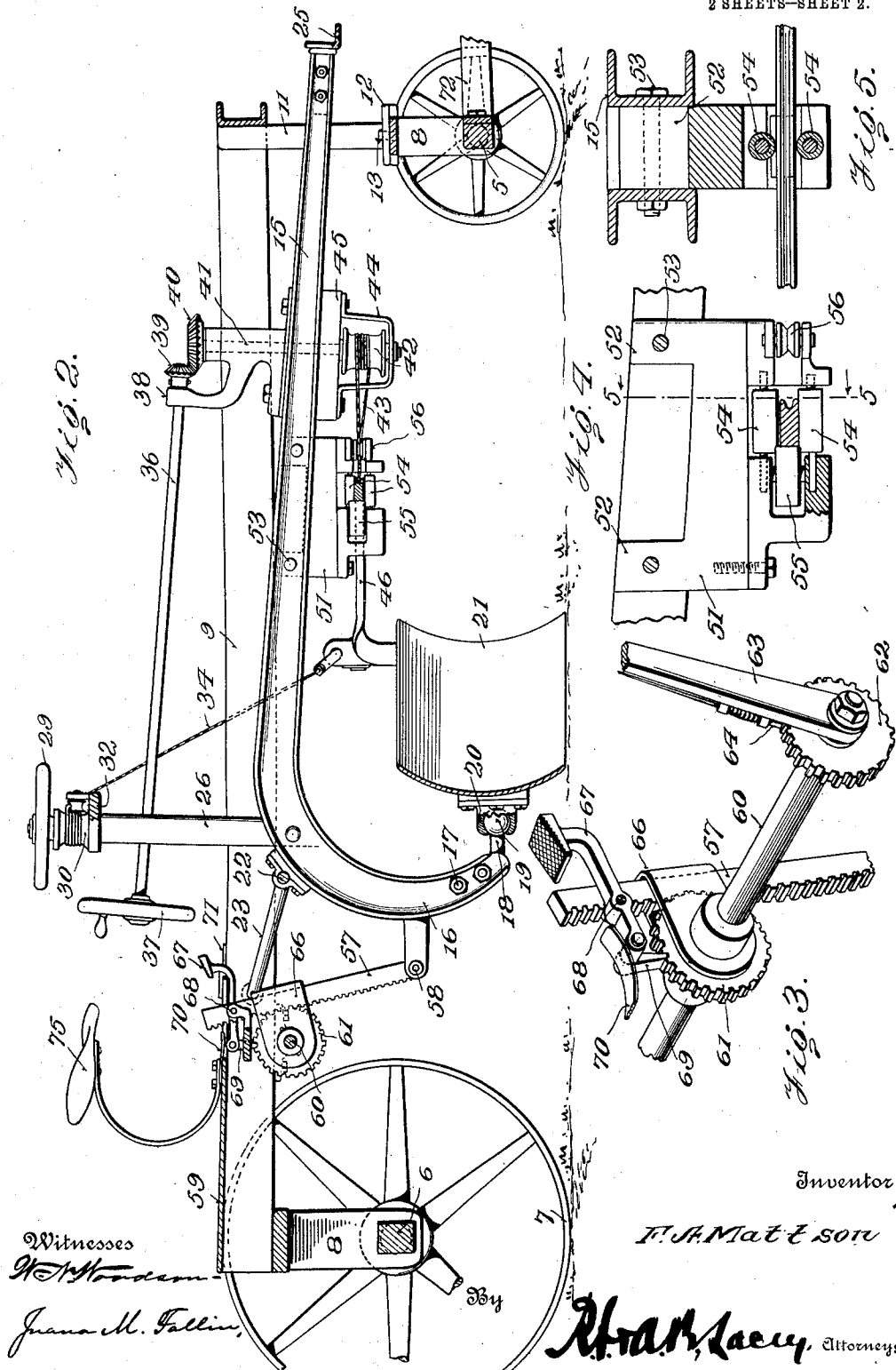
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UNITED STATES PATENT OFFICE.

FRANK A. MATTSON, OF CUMBERLAND, WISCONSIN.

ROAD-GRADER.

1,006,576.

Specification of Letters Patent.

Patented Oct. 24, 1911.

Application filed May 25, 1910. Serial No. 563,422.

To all whom it may concern:

Be it known that I, FRANK A. MATTSON, citizen of the United States, residing at Cumberland, in the county of Barron and State of Wisconsin, have invented certain new and useful Improvements in Road-Graders, of which the following is a specification.

This invention relates to road graders and has for its object the provision of a strong, durable and thoroughly efficient machine of this character for leveling roads and for grading and renewing the surfaces thereof.

A further object of the invention is to provide improved means for raising and lowering the scraping blade, and means for supporting said blade in different positions of vertical adjustment.

A further object is to provide novel means for adjusting the scraping blade laterally in a horizontal plane, and means for tilting the opposite ends of the blade to conform to the inclination of the surface of a road.

A still further object of the invention is generally to improve this class of devices, so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a road grader constructed in accordance with my invention; Fig. 2 is a longitudinal sectional view of the same; Fig. 3 is a detail perspective view of the rack and pinion for elevating the rear end of the blade supporting beam; Fig. 4 is an enlarged detail side elevation partly in section of the guide for the segment of the scraping blade; Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 4, and looking in the direction of the arrow; Fig. 6 is a vertical sectional view of the operating wheel employed for tilting the opposite ends of the scraping blade.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved road grader forming the subject matter of the present invention comprises a truck including front and rear axles 5 and 6 having ground wheels 7 journaled thereon and provided with vertically disposed yokes 8, one of which forms a support for a horizontally disposed main frame 9. The main frame 9 is preferably formed of channel-iron, said frame being closed at its front end and having its rear end open and bolted or otherwise rigidly secured to the adjacent yoke 8. Secured in any suitable manner to the closed end 10 of the main frame, are spaced depending standards 11 having their lower ends bent laterally and secured to a stationary disk 12, said disk being pivotally mounted at 13 on the central portion 14 of the front yoke 8, and constituting in effect a fifth wheel so as to permit free pivotal movement of the forward ground wheels of the truck when making a turn. Interposed between the side bars of the main frame 9, is a draft beam 15 preferably formed of spaced channel bars having their lower ends curved downwardly at 16 and rigidly united by bolts or similar fastening devices 17. Interposed between the side bars of the draft beam 15 at the lower end thereof, is a pin 18 having a spherical head 19 which enters a correspondingly shaped socket 20 secured to the convex face of a scraping blade 21, thus to form in effect a universal connection between the scraping blade and draft beam. Pivotaly mounted at 22 on the rear end of the draft beam, is a substantially U-shaped bail 23, the opposite ends of which are provided with angularly disposed fingers which extend through the adjacent side bars of the main frame for engagement with clamping nuts 24. The bail 23 serves to suspend the rear end of the draft beam from the main supporting frame and also serves to center said beam with respect to the main frame and prevent lateral movement thereof.

The forward end of the draft beam 15 is extended longitudinally between the guide plates or standards 11 and is provided with a terminal draft device preferably in the form of a draft device 25. Interposed between the side bars of the draft beam 15 at the rear end thereof, is a vertical post 26 having a socket 27 formed in the upper end thereof for the reception of a pin 28. Secured to the pin 28, is a hand wheel 29 below which is arranged a drum 30, the latter being

keyed or otherwise rigidly secured to the hand wheel, as indicated at 31. Interposed between the drum 30 and the upper end of the post 26, is an oscillating member or bracket 32, the latter being free to rotate on the pin 28 and provided with oppositely disposed guiding rollers or pulleys 33 over which passes a cord or cable 34 for attachment to the drum 30. The opposite ends of the cord or cable 34 are secured to tension screws 35 disposed at the opposite ends of the scraping blade so that by rotating the hand wheel 29, said blade may be tilted to conform to the inclination of the surface of the road and also to permit the formation of a gutter or ditch at one or both sides of the road bed. Journaled in the post 26 is a downwardly inclined shaft 36, one end of which is provided with a hand wheel 37, while the other end thereof is journaled in a bracket 38 and is provided with a bevel pinion 39 which meshes with a bevel gear 40 carried by a vertically disposed stud shaft 41. The shaft 41 extends through the draft beam 15 and is provided at its lower end with a drum 42 on which is wound a cord or cable 43. The drum 42 is housed within a bracket 44 secured to a block or support 45 on the lower face of the draft beam, said bracket serving to house the drum 42 and also forming a bearing for the lower end of the shaft 41.

Extending laterally from the scraping blade 21 is a flat arcuate bar 46 having its opposite ends twisted and extended downwardly to form attaching arms 47 for engagement with the rear or convex surface of the scraping blade 21. Secured to the upper ends of the arms 47 are vertically disposed fingers 48 having threaded openings formed therein, one of which receives the screw 35, while the other receives a similar screw 49 to which is attached the adjacent end of the cord or cable 43, there being a seating groove 50 formed in the arcuate bar 46 for the reception of the cable 43, as shown.

Depending from the draft beam 15 at the rear of the winding drum 42, is a casting 51 having its upper portion provided with spaced vertically disposed lugs 52, which latter are interposed between the side bars of the draft beam and are rigidly secured thereto by bolts or similar fastening devices 53. The lower face of the casting 51 is cut-away to accommodate the arcuate bar 46, there being spaced rollers 54 journaled in the casting and bearing against the upper and lower surfaces of the arcuate bar 46 for the purpose of reducing friction between the parts. A flat disk or roller 55 is also preferably journaled in a recess in the casting 51 and adapted to bear against the concaved face of the bar 46. Suitable sheaves or pulleys 56 are journaled on the front end of the casting 51 for the purpose of guiding the rope or cable 43 on the winding drum 42. Thus it will be seen that by rotating the hand wheel 37, motion will be transmitted through the medium of the bevel gears 38 and 39, drum 42 and cable 43 to the scraping blade so as to move said scraping blade in a horizontal plane to any angle or inclination with respect to the wheels of the truck.

As a means for raising and lowering the scraping blade, there is provided a rack 57, one end of which is pivotally connected at 58 on an arm extending laterally from the curved end 16 of the draft beam, while the upper end thereof extends through an opening in a detachable floor or platform 59 mounted on the main frame of the machine. Journaled in suitable bearings in the side bars of the main frame, is a transverse shaft 60 having a gear wheel 61 secured thereto and which meshes with the teeth on the rack 57, one end of said shaft being extended longitudinally beyond the adjacent side bar of the main frame and provided with a ratchet wheel 62 and an operating lever 63. The operating lever 63 is loosely mounted on the adjacent end of the shaft 60 and is locked in engagement therewith by a pawl 64 to which is operatively connected a hand lever 65. Loosely mounted on the shaft 60 is a casing or housing 66 which latter embraces the rack 57 and serves to retain the teeth on the rack in engagement with the gear wheel 61.

As a means for locking the rear end of the draft beam in different positions of vertical adjustment, there is provided a foot lever 67 having its intermediate portion pivotally mounted at 68 on the platform 59 and its inner end provided with a depending locking pawl 69 adapted to engage the teeth of the gear wheel 61, there being a leaf spring 70 secured to the upper surface of the platform 59 and bearing against the pivoted end of the pawl 69 for normally and yieldably holding the active end of said pawl in engagement with the teeth on the gear wheel, as best shown in Fig. 3 of the drawings. Thus it will be seen that by depressing the free end of the foot lever 67, the pawl 69 will be disengaged from the teeth of the gear wheel 61 so that by moving the hand lever 63 either to the right or left, the vertical adjustment of the scraping blade may be effected, said blade being locked in adjusted position by the pawl 69 when the foot lever is released. Suitable clips 71 are preferably secured to the side bars of the supporting frame for engagement with the adjacent edge of the platform 59, the rear edge of said platform being bolted or otherwise rigidly secured to said main frame. By constructing the platform in this manner, the latter may be readily detached from the main frame when it is desired to expose the locking mechanism to effect any necessary repairs thereto. Secured to the front

axle 5 is a bracket 72 in which is journaled a transverse rod 73 carrying a tongue supporting clip 74. A seat 75 is preferably secured to the platform 59 and in convenient position for the operator to manipulate the different hand wheels and levers.

From the foregoing description, it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention, what is claimed as new is:

1. A machine of the class described including a frame, a draft beam pivotally connected with the frame, a scraping blade having a universal connection with the rear end of the draft beam and provided with an arcuate bar having a seating groove formed therein, a casting depending from the draft beam and provided with a guiding recess for the reception of said arcuate bar, a bracket depending from the casting, a vertically disposed winding drum mounted for rotation in said bracket, a cable secured to the winding drum and extending within the groove of the arcuate bar for attachment to the opposite ends of the scraping blade, means for rotating the drum to move said scraping blade laterally in a horizontal plane, means operatively connected with the opposite ends of the scraping blade for tilting said blade in a vertical plane, and means for raising and lowering the rear end of the draft beam.

2. A machine of the class described including a frame, a draft beam pivotally connected with the frame, a scraping blade having a universal connection with the rear end of the draft beam, a post extending upwardly from the draft beam, a drum mounted for rotation on the post and provided with a hand wheel, a bracket interposed between the drum and adjacent end of the post and provided with guide rollers, and a cable carried by the drum and having its opposite ends passing over the guide rollers for attachment to the adjacent ends of the

scraping blade for tilting the scraping blade in a vertical plane.

3. A machine of the class described including a supporting frame, a draft beam pivotally connected with the frame, a casting depending from said frame and provided with a guiding recess, a scraping blade having a universal connection with the rear end of the draft beam, an arcuate bar secured to the opposite ends of the scraping blade and having its intermediate portion provided with a groove and extended within the guiding recess of the casting, a post extending upwardly from the rear end of the draft beam, a winding drum mounted for rotation on the post, fingers projecting upwardly from the scraping blade and having openings formed therein and arranged at an angle to each other, screws threaded in said openings, a cable extending around the winding drum and engaging some of the screws, a second winding drum, and a second cable engaging the last mentioned winding drum and having its opposite ends seated in the arcuate groove of the bar and connected with other of said screws.

4. A machine of the class described including a supporting frame, a draft beam pivotally connected with the frame, a post extending upwardly from the beam and provided with a socket, a pin seated in said socket, a hand wheel secured to the pin, a bracket resting on the upper end of the post and provided with oppositely disposed rollers, a winding drum interposed between the bracket and hand wheel and keyed to the latter, a scraping blade having a universal connection with the rear end of the draft beam, and a flexible connection between the winding drum and the opposite ends of the scraping blade.

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

FRANK A. MATTSON. [L. s.]

Witnesses:

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