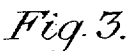
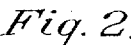
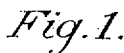


APPLICATION FILED MAR. 22, 1909.

Patented Apr. 12, 1910.

2 SHEETS--SHEET 1.



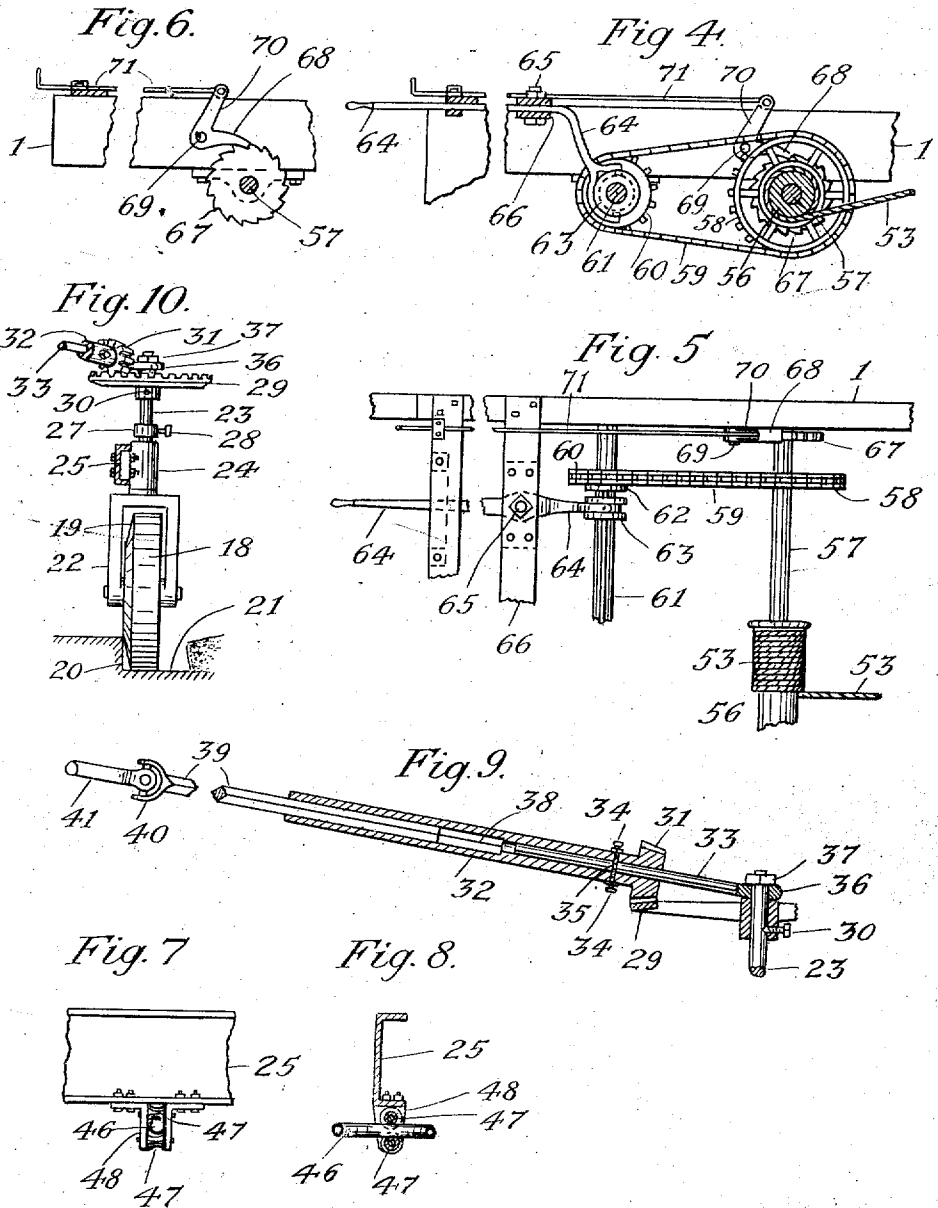
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E. M., E. F. & D. O. WHEELLOCK.
GUIDE WHEEL FOR PLOW MOTORS.
APPLICATION FILED MAR. 22, 1909.

954,839.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDWIN M. WHEELLOCK, OF MINNEAPOLIS, EMERY F. WHEELLOCK, OF NORTHFIELD, AND
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GUIDE-WHEEL FOR PLOW-MOTORS.

954,839.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed March 22, 1909. Serial No. 485,104.

To all whom it may concern:

Be it known that we, EDWIN M. WHEELLOCK, residing at Minneapolis, in the county of Hennepin and State of Minnesota; EMERY F. WHEELLOCK, residing at Northfield, in the county of Rice and State of Minnesota, and DICKINSON O. WHEELLOCK, residing at Minneapolis, in the county of Hennepin and State of Minnesota, all citizens of the United States, have jointly invented certain new and useful Improvements in Guide-Wheels for Plow-Motors, of which the following is a specification.

Our invention relates to traction engines or motors used in plowing; and its object is to provide means for guiding the motor to cause it to travel at a proper distance from and along the side of a previously formed furrow. This object we accomplish by providing an independent guide wheel adjustably supported in front of the motor and adapted to contact with the unplowed side of a furrow and thereby guide the motor.

Our improvement is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view and Fig. 2 a side elevation of an engine or motor embodying our improvement, showing the guide wheel in operative position; Fig. 3 is a view similar to Fig. 2 but showing the guide wheel in elevated or inoperative position; Figs. 4 to 8, inclusive, are detached views of parts of the devices for raising and lowering the guide wheel; and Figs. 9 and 10 are detail views of parts of the devices for swiveling and adjusting the guide wheel support.

We have selected for the purpose of illustration, and have shown in the drawings in somewhat diagrammatic form, an explosive-engine motor, which is the type of motor we prefer to use for plowing, but our improvements are adapted to be used in connection with motors of other types.

In the drawings 1 designates the main frame of the motor, 2 the platform for the operator, 3 the explosive engine, 4 the driving-gear, 5 the rear wheels, 6 the front wheels, 7 the divided front axle, which is preferably suspended from the frame 1 by hangers 8 and stayed by braces 9; 10 the angular arms pivoted to the axle 7, and 11 the equalizer for the pivoted members of the front axle. To the arms 10 are fastened the

ends of a cable or chain 12 which runs around a pulley 13 on the end of an operating rod 14 which is journaled in a hanger 15 and extends rearward and has a hand-wheel 16 in convenient position for an operator on the platform 2 to turn it for steering the motor. All of these parts may be of any usual or suitable construction. A gang of plows (not shown) may be connected to the motor frame in the customary way by the chains 17, or rods, or other suitable means, to enable the motor to draw the gang for plowing.

To relieve the operator of the strain and labor of giving constant attention to the steering devices while plowing in order that the motor and plows may move in proper direction with relation to the previously plowed ground, we provide a guide wheel 18 arranged a short distance in front of the machine. The inner side of this wheel is beveled, as shown at 19, adapting it to bear against the land-side 20 of the furrow 21 to prevent the motor from moving away from the furrow; and the operator can, by setting the steering-gear in position to give the motor a slight tendency to move in that direction, obviate any tendency of the motor to move in the opposite direction, or toward the plowed ground. Such guide wheel is not only an aid to the operator in steering the machine, but in effect is made to serve as a positive and practically automatic guide for the machine during the plowing along the side of a previously formed furrow. It is preferable to provide the guide wheel with a relatively wide tread as shown, and to permit it in use to roll on the bottom of the furrow, but, obviously, the tread may if desired be made narrow, so that the wheel will be little more than a disk, and, in that case, it could be desirable to hold it in suspension to prevent it from cutting too deep into the bottom of the furrow.

The guide wheel 18 is mounted in a yoke 22 provided on the lower end of a spindle 23 which is journaled in a box 24 on the forward end of a channel-bar 25 the rear end of which is journaled on a projecting portion 26 of the spindle of one of the steering wheels 6. The lower end of the journal-box 24 abuts the body of the yoke, and above it is a removable collar 27 held in place by a set-screw 28, whereby the box is kept in proper position on the spindle.

On the upper portion of the spindle is a crown wheel 29, which may be fastened by a set-screw 30; and a bevel pinion 31 is arranged in mesh with the wheel 29, and is carried on the end of a tubular body or pipe 32. The bore of the front portion of this pipe is round for receiving a fixed round rod or shaft 33 on which the pipe may rotate, and its rotation is permitted while its longitudinal movement is prevented by screws 34 entered into a circumferential groove 35 in the shaft. The forward end of the shaft 33 is provided with an eye 36 which engages the spindle 23 and is secured by a nut 37 thereon. This arrangement permits the pipe to be turned for rotating the pinion 31 and therewith the crown-wheel 29 and spindle 23 to vary and adjust the inclination of the guide wheel.

For turning the pipe 32 the bore 38 of its rearward portion is made square or angular and within it is arranged a correspondingly angular rod 39 adapted to slide therein, whereby the members 32 and 39 constitute a telescoping shaft for operating the pinion 31. To enable the shaft member 39 to be operative when the guide wheel carrier is moved vertically or laterally, its rear end is connected by a suitable universal joint 40 with the end of an operating rod 41 which is mounted in suitable journal boxes 42 and 43 and extends to the platform 2, a hand-wheel 44 being provided on its end, so that the operator, by turning the hand-wheel, can adjust the direction of travel of the guide wheel as desired, whatever may be the course of travel of the steering-wheels 6, for the telescoping shaft for operating the pinion 31 will compensate for the variations of distance between the spindle 23 and joint 40 caused by changing the courses of the steering wheels.

For raising and lowering the guide wheel its carrier 25, which is journaled on the wheel axis and stayed by a brace 45 pivoted to the same axis, is adjustably mounted on a curved support 46, which preferably consists of a piece of gas-pipe. To enable the carrier 25 to adjust itself along its support as required when the direction of travel of the steering wheels is changed, anti-friction rollers 47 supported from the carrier bar by a pair of hangers 48 engage the upper and lower surfaces of the support 46 and allow the carrier to move freely thereon in lateral direction between the stops 49 and 50 provided on the support to prevent movement beyond proper limits. To enable the support 46 to be operated for raising and lowering the guide wheel it is connected by an eye 51 on its inner end with an eye-bolt 52 secured to the front of the fixed axle 7; and a cable 53 fastened to the support near its middle is made to run on a pulley 54 mounted on a standard 55 at the front of

the frame 1 and extend to a drum 56 on a transverse shaft 57 journaled on the under side of the main frame. A sprocket-wheel 58 on the shaft 57 is connected by a chain 59 with a sprocket-wheel 60 loose on the shaft 61 of the motor driving mechanism but provided with a friction disk 62 on its side adapted to be engaged by a friction clutch member 63 splined on the shaft 61; and a clutch-shifter 64, pivoted at 65 to a cross-bar 66, enables the operator at will to start and stop the cable winding mechanism to raise and lower the guide wheel devices. To hold the latter in their adjusted positions a ratchet 67 provided on the shaft 57 is engaged by a dog 68 pivoted at 69 to the frame and having an arm 70 which is connected to a sliding rod 71 by means of which the operator can move the dog to and from locking engagement with the ratchet. By means of these devices the operator is enabled to utilize the power of the engine to lift the guide wheel from the ground, and the locking devices will hold it in elevation until the locking dog is again freed by the operator, when the wheel will gravitate to the ground.

In operation, while plowing at the side of a previously made furrow, the guide wheel runs on the bottom of the furrow with its beveled side adapted to properly contact with the land-side whenever the course of the motor is such as to cause such contact, and the operator is able, by turning the rod 41, to adjust the inclination of the guide wheel relative to the direction of the motor movement as may be required. At the end of a furrow he may, as he wishes, either lift the guide wheel from the ground, or, when the conditions permit, allow it to remain on the ground and be free to adjust itself to the course of movement taken by the motor.

Having described our invention, what we claim and desire to secure by Letters Patent is—

1. The combination with a plow motor, of a guide wheel arranged to run in a furrow in advance of the motor and having a beveled side adapted to bear against the land-side, a carrier therefor pivoted to the axle of one of the steering wheels, and a support upon which the carrier is free to move in lateral directions, substantially as set forth.

2. The combination with a plow motor, of a guide wheel arranged to run in a furrow in advance of the motor and having a beveled side adapted to bear against the land-side, a carrier therefor pivoted to the axle of one of the steering wheels, a vertically movable carrier support upon which the carrier is free to move laterally, and means for raising and lowering such support, substantially as set forth.

3. The combination with a plow motor, of a guide wheel adapted to run in a furrow

and bear against its land-side, a vertical axis providing the bearings for such wheel, means for turning the axis to vary the inclination of the guide wheel, a carrier for such wheel arranged in front of the motor, power-driven means for raising and lowering the wheel and its connections, and means for locking such devices in their adjusted positions, substantially as set forth.

4. The combination with a plow motor, of a guide wheel adapted to run in a furrow and bear against its land-side, a vertical axis providing the bearings for such wheel, gearing therefor, an operating shaft for turning the axis to vary the inclination of the guide wheel, a carrier for such wheel arranged in front of the motor, and controllable connections with the motor driving mechanism for raising and lowering the carrier, substantially as set forth.

5. The combination with a plow motor, of a guide wheel adapted to run in a furrow and bear against its land-side, a vertical axis providing the bearings for such wheel, gearing therefor, an operating shaft for turning the axis to vary the inclination of the guide wheel, a carrier therefor pivotally connected to the motor and extending in front thereof, and controllable connections with the motor driving mechanism for turning the carrier on its pivot to raise and lower the guide wheel, substantially as set forth.

6. The combination with a plow motor, of steering wheels, a divided axle and steering gear therefor, a guide wheel adapted to run in a furrow and bear against its land-side, a carrier therefor pivoted to the axis of one of the steering wheels and extending in front of the motor, a pivoted support on which the carrier is free to move laterally, a vertical axis providing the bearings for such wheel,

a telescoping shaft and gearing for turning such axis, and means for raising and lowering the guide wheel and its connections, substantially as set forth.

7. The combination with a plow motor, of steering wheels, a divided axle and steering gear therefor, a guide wheel adapted to run in a furrow and bear against its land-side, a carrier therefor pivoted to the axis of one of the steering wheels and extending in front of the motor, a pivoted support on which the carrier is free to move laterally, and controllable connections between the motor driving mechanism and guide wheel supporting devices for raising and lowering the latter devices, substantially as set forth.

8. The combination with a plow motor, of steering wheels, a divided axle and steering gear therefor, a guide wheel adapted to run in a furrow and bear against its land-side, a carrier therefor pivoted to the axle of one of the steering wheels and extending in front of the motor, a support therefor arranged to swing in vertical direction, the carrier being free to move in lateral directions on its support, a vertical axis providing the bearings for the guide wheel, controllable means for turning the guide wheel on the vertical axis, and means for raising and lowering said support and with it the carrier and guide-wheel, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses this 17th day of March, 1909.

EDWIN M. WHEELOCK.
EMERY F. WHEELOCK.
DICKINSON O. WHEELOCK.

Witnesses:

E. HOFSTEDE,
J. L. JOHNSTON.