M. L. SENDERLING.

TRACTOR.

APPLICATION FILED OCT. 14, 1913.

1,186,340.

Patented June 6, 1916.

6 SHEETS—SHEET 1.

Fig. 1.

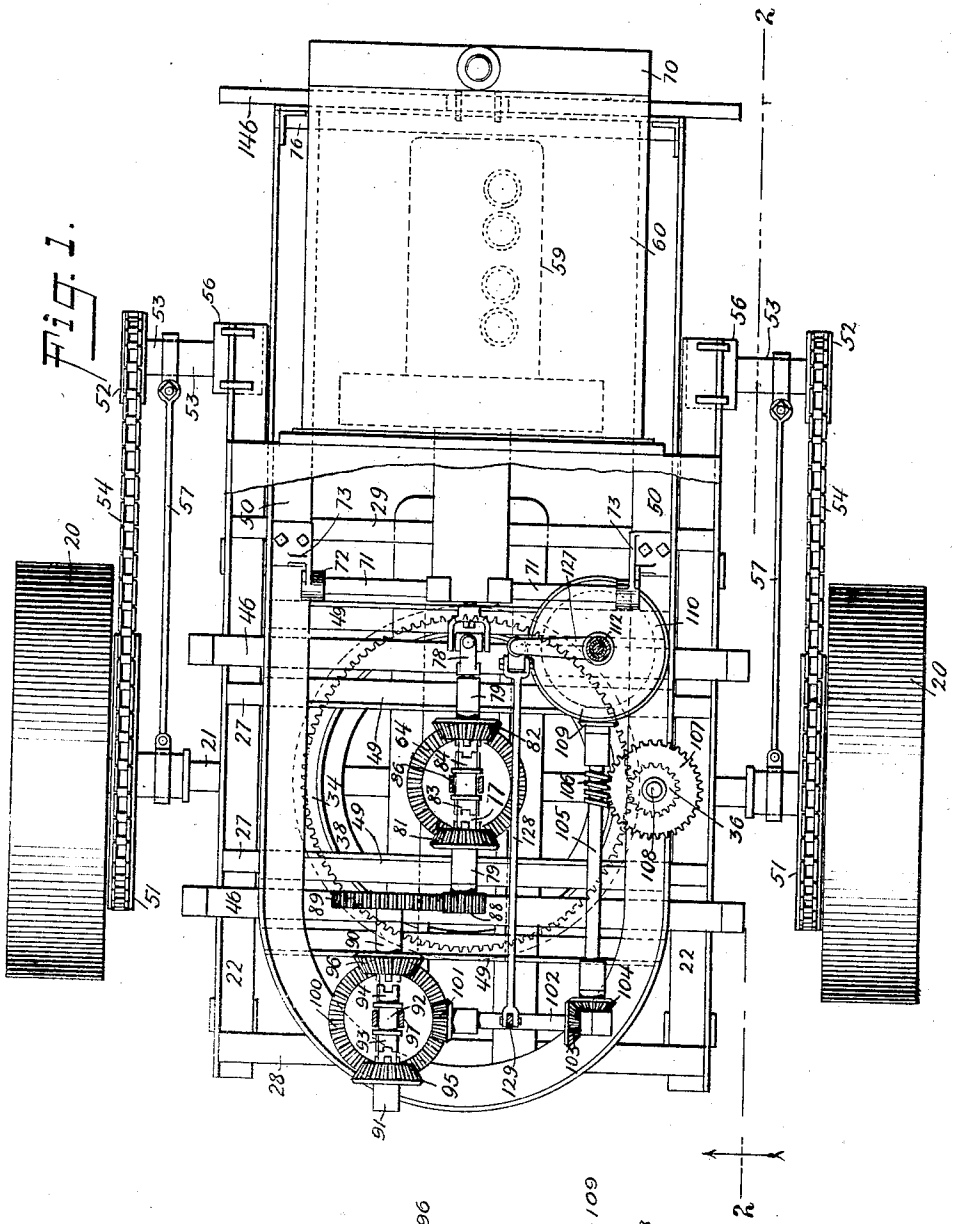
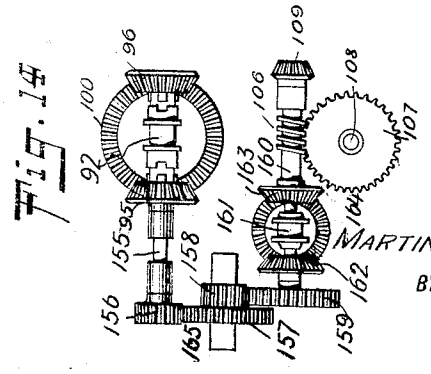


Fig. 14.



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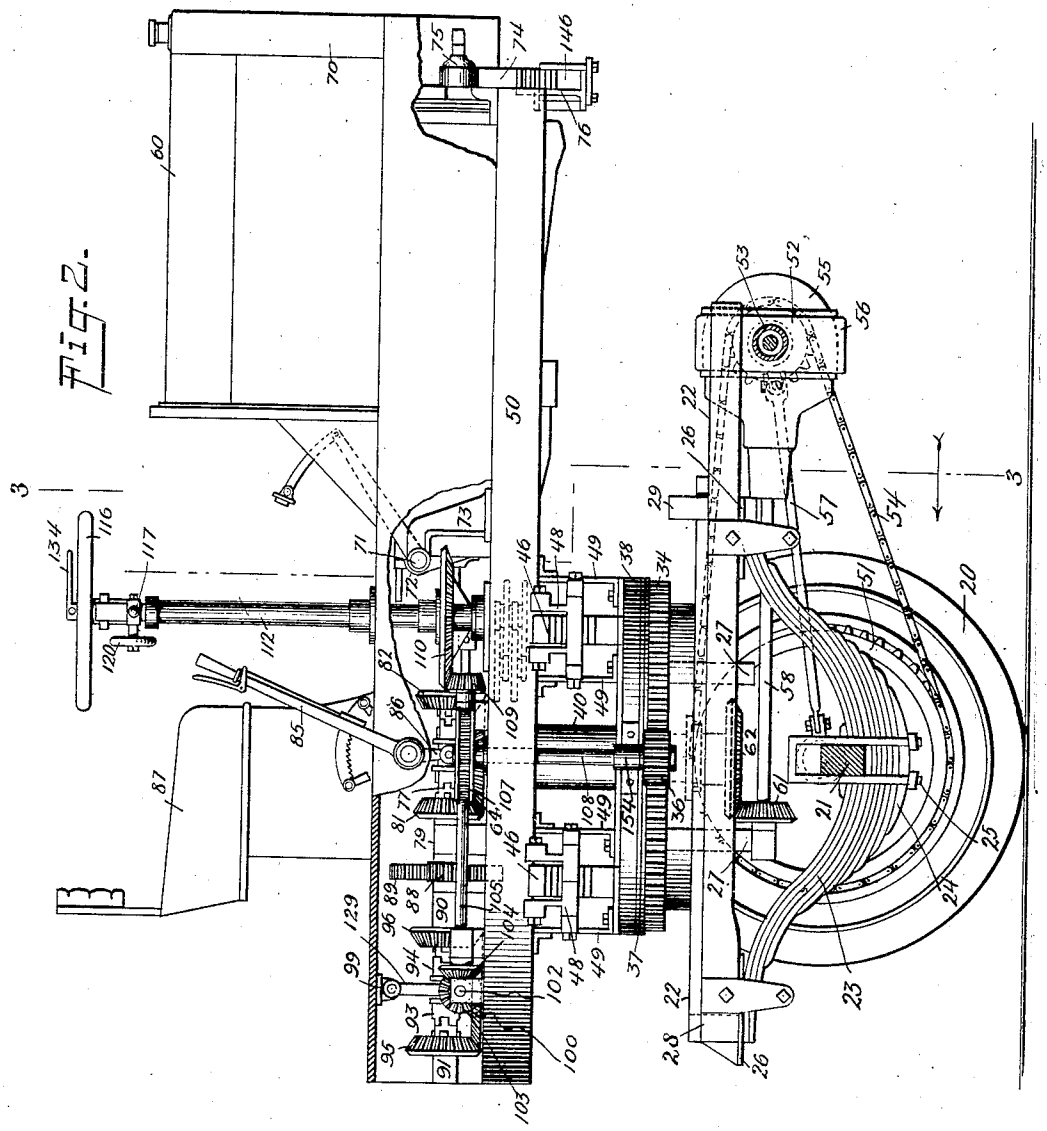
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6 SHEETS—SHEET 2.

Fig. 2.



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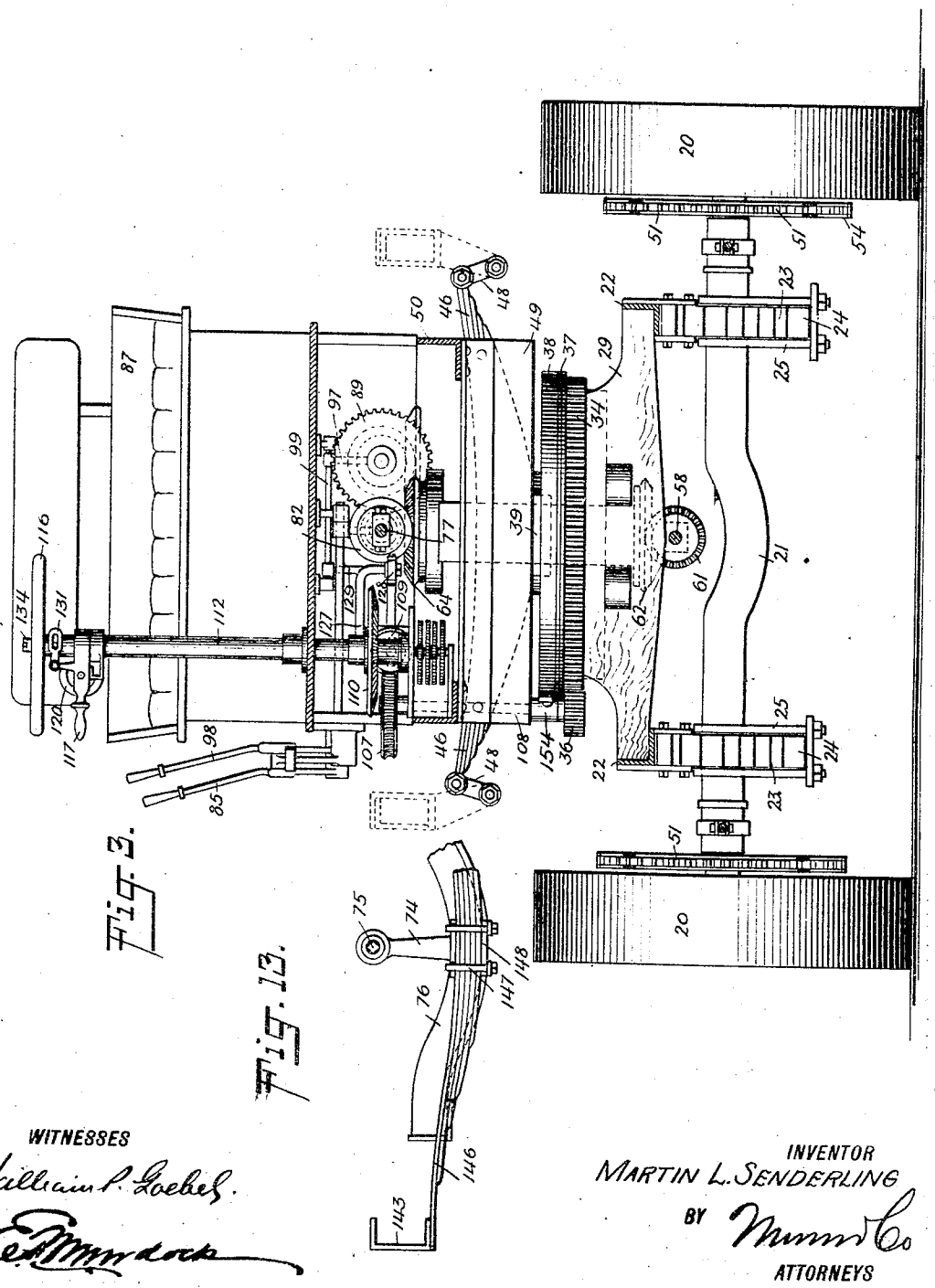


Fig. 3.

Fig. 13.

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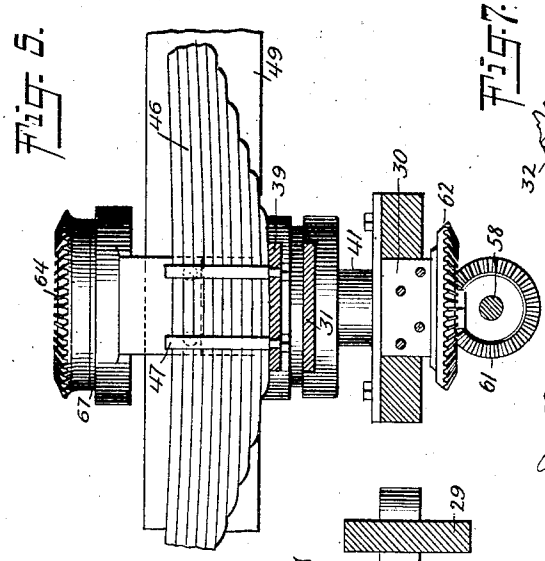


Fig. 5.

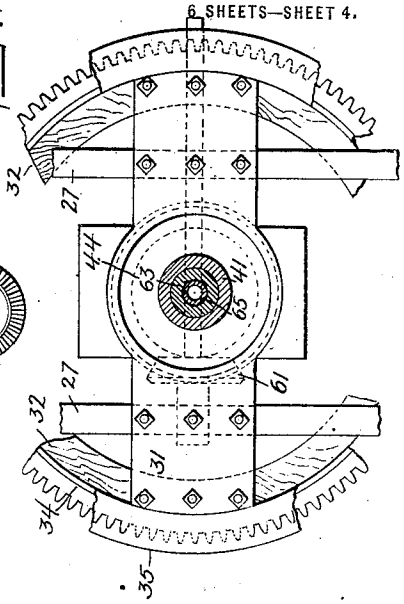


Fig. 7.

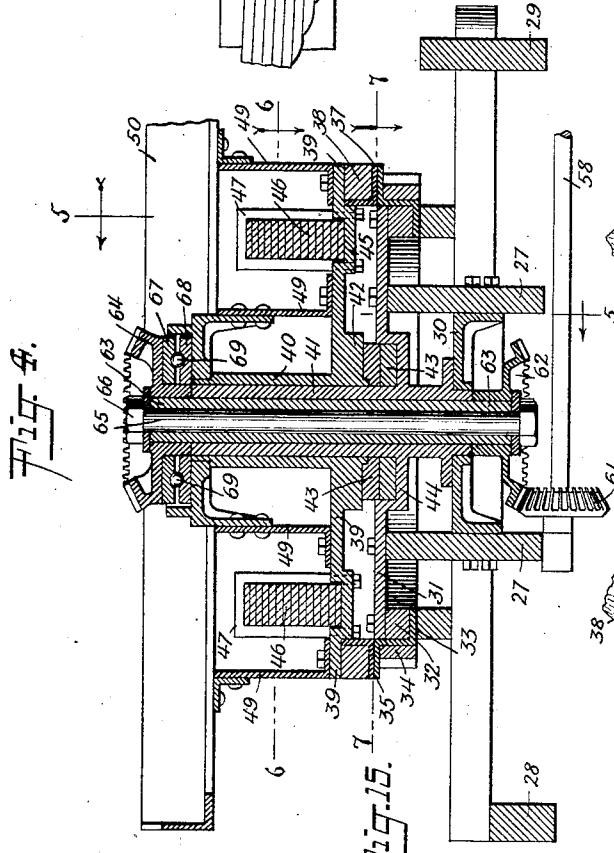


Fig. 4.

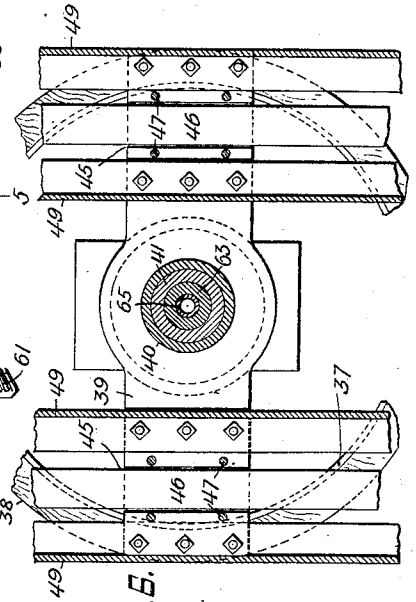


Fig. 8.

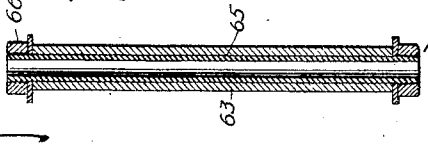


Fig. 15.

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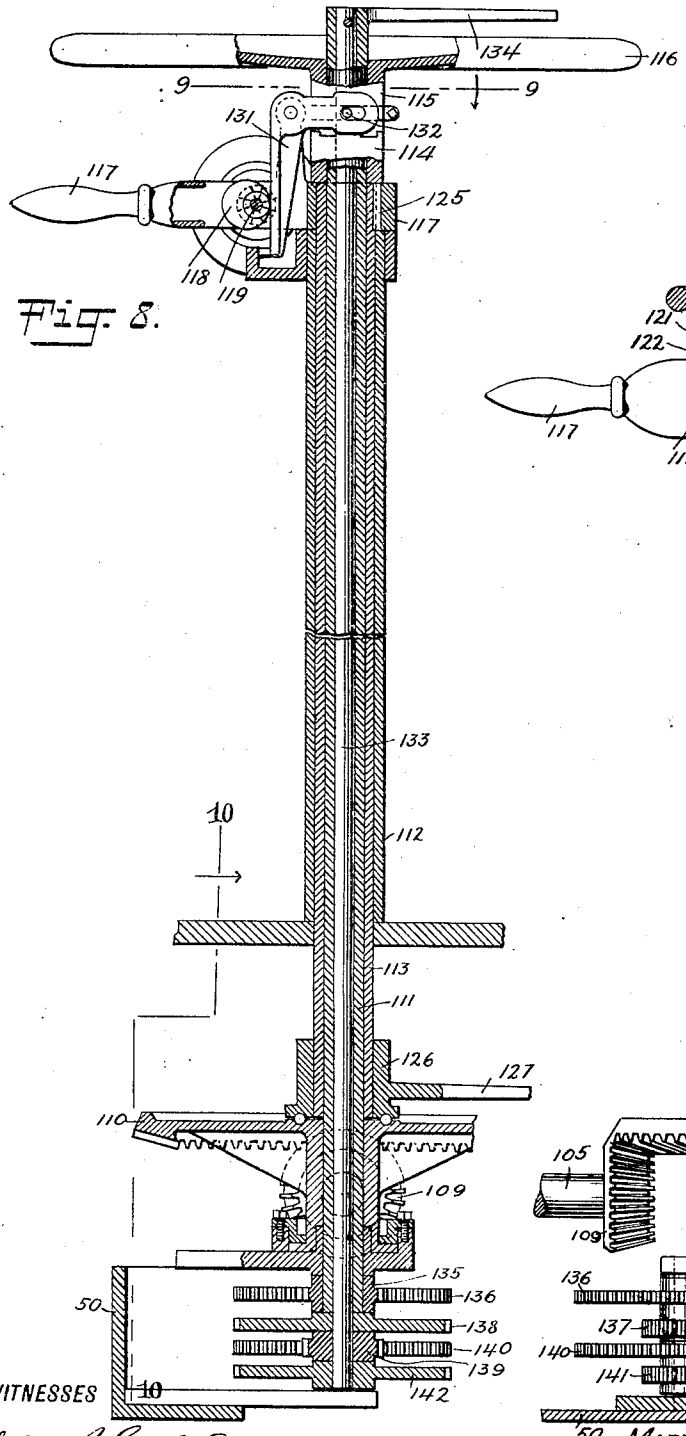
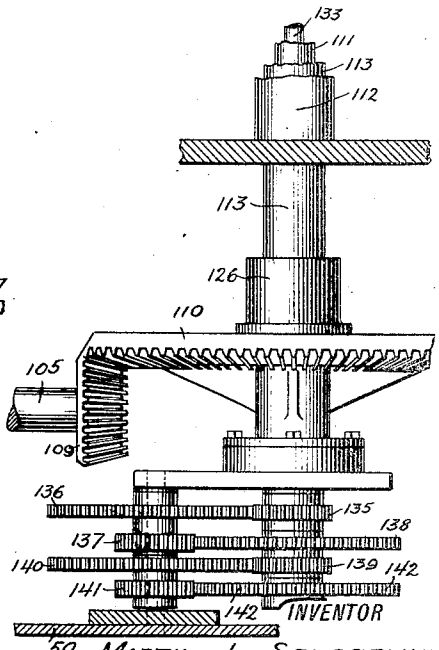


Fig. 8.

Fig. 9.

Fig. 10



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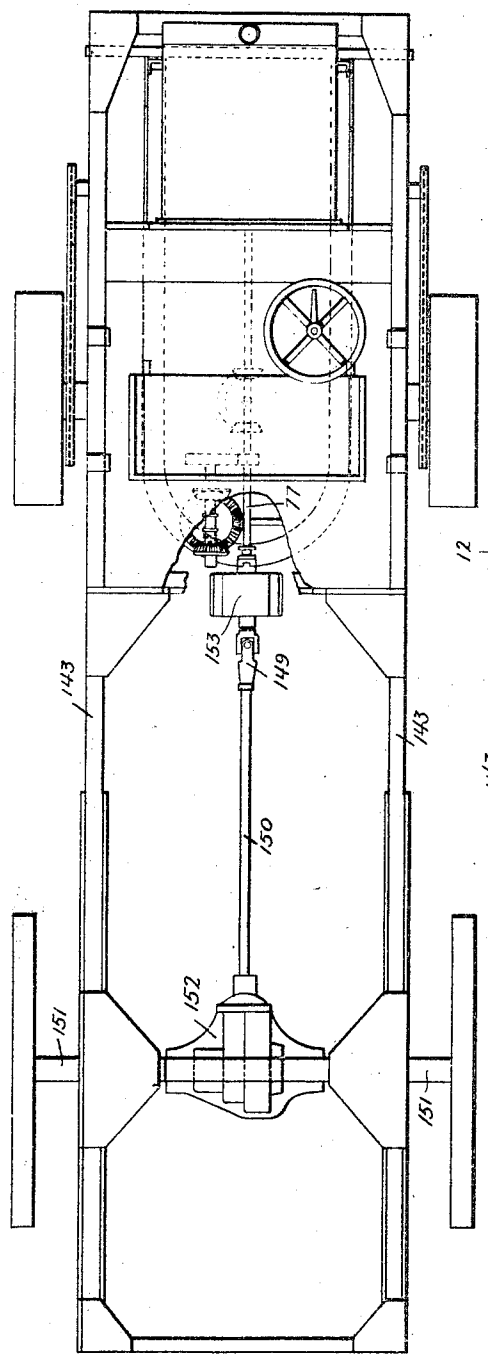


Fig. 15.

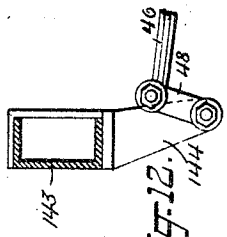


Fig. 12.

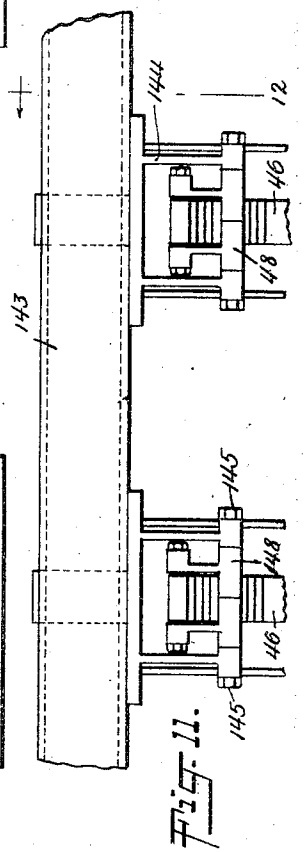


Fig. 11.

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UNITED STATES PATENT OFFICE.

MARTIN L. SENDERLING, OF JERSEY CITY, NEW JERSEY.

TRACTOR.

1,186,340. Specification of Letters Patent. Patented June 6, 1916.

Application filed October 14, 1913. Serial No. 795,061.

To all whom it may concern:

Be it known that I, MARTIN L. SENDERLING, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Tractor, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are, to provide a power traction unit arranged to swing about a self-contained center; to provide a steering mechanism therefor; to provide alternate power and hand mechanism for operating said steering mechanism; to provide means for augmenting the traction exerted by said unit; to provide means for hanging weighted members on the carrying members automatically adjustable to the weight sustained; to provide means showing the operating direction of the unit; and to provide a mechanism adapted for operative engagement with a carrying body, having a bolt to swing the same on a self-contained center.

In the drawings, Figure 1 is a top plan view of a unit constructed and arranged in accordance with the present invention, the covering platform of the same being partly removed to show the mechanism therebelow; Fig. 2 is a side view of the same, the covering platform being partly removed and partly in section to show the mechanism contained thereunder; Fig. 3 is a vertical cross section taken on the line 3—3 in Fig. 2; Fig. 4 is a detail view on an enlarged scale, showing in vertical longitudinal section, the king bolt, and the fifth wheel structure and supporting frame of said unit; Fig. 5 is a vertical cross section taken on the line 5—5 in Fig. 4; Fig. 6 is a horizontal section taken on the line 6—6 in Fig. 4; Fig. 7 is a horizontal section taken on the line 7—7 in Fig. 4; Fig. 8 is a vertical section on an enlarged scale of the steering post and parts connected therewith for operating the said unit; Fig. 9 is a horizontal section taken as on the line 9—9 in Fig. 8; Fig 10 is a vertical section taken on the line 10—10 in Fig. 8; Fig. 11 is a detail view in the side elevation, showing a fragment of the trailer chassis and means for connecting and supporting same on the structure; Fig. 12 is a vertical section taken on the line 12—12 in Fig. 11; Fig. 13 is a detail view in front elevation, showing a fragment of the motor support of the tractor and the connection between the tractor and side bar of the trailer; Fig. 14 is a plan view, showing a modified form of transmission mechanism operatively connecting the driving shaft and steering mechanism; Fig. 15 is a vertical section of the modified form of the king bolt; Fig. 16 is a plan view of a modified form of the tractor, showing the same operatively united with the trailer to form in conjunction therewith a four wheel drive.

The tractor herein described is a two-wheeled vehicle. The traction wheels 20 are rotatively mounted on a dropped center axle 21. Upon the axle 21, a truck frame having side bars 22 is supported by elliptical springs 23. The springs 23 are laminated in form and rigidly secured to the axle 21 by the conventional plates and the clip loops 25. The ends of the springs 23 are flattened to rest on the bearing shoes 26, with which the side bars 22 are furnished. Extending between the side bars 22 are the central bolsters 27 disposed relatively midway of the length of the said side bars and the brace bars 28 and 29. Extending between the said bolsters 27 is a bearing plate 30, centrally bored to form a bearing for the king bolt of the vehicle. The center of the said opening in the plate 30 is coincident with the center of the truck of the tractor. To the bolsters 27 and to the centrally raised portions thereof, is bolted a plate 31 which forms the web of the turntable or fifth wheel of the tractor. The wheel thus mentioned is made by bolting to the plate 31, a ring 32 rectangular in cross section, a ring 33 Z-shaped in cross section, and a gear toothed ring 34. As best seen in Fig. 4 of the drawings, the ring 32 when assembled with the ring 33 fits within the interior angle thereof, while the ring 34 fits the exterior angle thereof. The flange 35 of the ring 33 is extended to overhang the crown of the teeth on the ring 34 to operate by means of a bearing for shaft 108, mounted on the ring or section 38, as shown best in Fig. 3 of the drawings, as a guide for the pinion 36, the teeth of which, as shown in Fig. 3 of the drawings, mesh with the teeth of the ring 34 or with the teeth of the turntable or fifth wheel of the tractor. The plate 31 of the said wheel primarily supports the weight of the body of the tractor. For this purpose the upper surface of the flange 35 of the ring 33 is dressed to form a track or bearing for the ring 37.

which ring is angular in cross section, the angle being filled by the filler ring 38, which is rectangular in cross section. By means of this construction, the rings 33 and 37 may be replaced to compensate for wear thereon, without necessitating the loss of a relatively large portion of the construction.

To the rings 37 and 38 is bolted a bed plate 39. The bed plate 39 is centrally provided with a hub 40. The hub 40 is bored to receive and form a bearing for the elongated hub 41, with which the plate 31 is provided. The hubs 40 and 41 thus constructed and assembled constitute the pivot on which the wheel carrying truck and the motor carrying body relatively turn.

The center of the bed plate 39 is thickened to form a lining pad 42, said pad resting upon lining disks 43, which disks are seated in a central recess or pocket formed by the drop section 44 of the plate 31, thereby forming a relatively continuous bearing for the exterior of the hub 41 with the interior of the hub 40.

The bed plate 39 is shaped to form a drop section 45 as seats for the laminated springs 46, which are bolted to the said seats by the clips 47, as seen particularly in Fig. 4. The said springs 46 are disposed in front of and at the rear of the hubs 40 and 41 to extend transversely beyond the sides of the body of the tractor to support the trailer, the shackles 48 being provided therefor as hereinafter more fully set forth. Rigidly bolted to the bed plate 39, are the framing beams 49, to which are secured the side bars of the tractor body, formed by the U-bent angle bar 50, which constitutes the base on which the tractor body is constructed.

The traction wheels 20 are each provided for traction purposes with a sprocket wheel 51, said sprocket and traction wheels being rigidly secured. The sprocket wheels 51 are directly connected with sprocket wheels 52, on the ends of the shafts 53 by means of the sprocket chains 54. The shafts 53 are united by any suitable form of differential gearing contained in the gear case 55. The shafts 53 are suitably mounted in bearings formed in the boxes 56, which boxes are suspended from the forward ends of the side bars 22, (see Figs. 1 and 2 of the drawings). To maintain the alinement of the axle 21 and the shafts 53, the said axle and shafts are suitably connected by the brace rods 57.

The differential gearing mounted in the gear case 55 is immediately connected to be operated by the transmission shaft 58 forming a part of the transmission mechanism, operatively connecting the said differential gearing and the driving shaft of a suitable prime mover 59 which is mounted within a bonnet 60. The shaft 58 has fixedly mounted thereon, a bevel gear wheel 61, with which a corresponding or immediate gear wheel 62 is meshed. The gear wheel 62 is fixedly mounted on a hollow spindle 63, which spindle extends through the hub 41 and has a bearing therein. At the upper end of the spindle 63 a bevel wheel 64 is fixedly mounted. The said wheels 62 and 64 and spindle 63 are bound together by the screw bolt 65, a nut 66 being provided to draw the bolt upon said members. To support the weight of the spindle 63 and the wheels 62 and 64, to avoid undue thrust of the wheel 62 on the wheel 61, bearing plates 67 and 68 are provided forming a race for balls 69, which thereafter support the weight of the said members.

The motor or prime mover 59, bonnet 60 and radiator 70 are mounted on the bar 50, having pivot shaft sections 71, the ends whereof have bearings in the boxes 72 formed in the brackets 73. The brackets 73 are bolted or suitably mounted upon the side extensions of the U-bent angle bar 50. The said shaft sections 71 and the brackets 73 form the rear bearings for the motor unit comprising the motor and operating mechanism therefor. The forward end of the said unit is supported in a standard 74, the motor frame being provided with a stud shaft 75 therefor. The standard 74, as seen best in Fig. 13, is directly mounted upon a dropped center brace 76, the ends whereof are structurally connected with the side extensions of the U-bent angle bar 50.

The driving shaft of the prime mover 59 is fixedly connected with the transmission driving shaft 77 by means of a knuckle 78. The shaft 77 is supported in bearings 79 erected on the framing beams 49 provided to support the same and mounted upon the side extensions of the angle bar 50. Loosely mounted on the shaft 77 and meshed with the wheel 64 are two oppositely disposed bevel wheels 81 and 82. The wheels 81 and 82 are each provided with clutch faces to receive the clutch heads 83 and 84 respectively. The heads 83 and 84 form a single member, keyed to the shaft 77 and shifted by means of a hand lever 85, the yoke 86 whereof rests between collars forming the bases of the heads 83 and 84. As seen best in Fig. 2 of the drawings, the lever 85 is conveniently disposed to the driver's seat 87.

It is obvious that as the clutch head 83 or 84 be engaged with the wheel 81 or 82, the wheel 64 and spindle 63 are rotated in relatively opposite directions. According as the spindle 63 and the wheel 62 are rotated, the shaft 58 is rotated to transmit to the shafts 53 a rotary direction, which operate to turn the traction wheels 20 forward or back as the case may be. Also it will be noted that if the lever 85 be moved to the neutral position where the heads 83 and 84 are both disengaged from the wheels 81 and

82, then the said wheels stand idly on the shaft 77, the wheel 64, and transmission mechanism connected therewith, coming to a standstill.

The shaft 77 is continuous in its rotation and is provided with a pinion 88, which pinion 88 is meshed with a relatively large gear wheel 89 on a countershaft mounted in bearings 90 and 91, set to one side of the shaft 77 and having keyed and slidably mounted thereon a clutch 92. The clutch 92 is provided with heads 93 and 94 which are adapted to engage the bevel pinions 95 and 96. The clutch is keyed on the countershaft and is moved from the neutral position shown in Fig. 1, to engage either of the said pinions when the yoke 97 is swung by the shaft 99 being rocked. The bevel pinions 95 and 96 may be regarded as the controlling wheels of the power steering mechanism, with which the present tractor is provided. The said pinions are loosely mounted on the shaft to rotate therewith only when the clutch 92 is moved to engage either of the said pinions. Said pinions are meshed relatively with the large bevel wheel 100. The wheel 100 is loosely mounted and free to rotate in either direction when impelled thereto by the pinions 95 and 96. Continuously engaging the wheel 100 is a third pinion 101. Pinion 101 is fixedly mounted on a shaft 102, having at the opposite end a bevel pinion 103, the teeth whereof are meshed with the teeth of a mated bevel pinion 104. Pinion 104 is mounted upon one end of a transmission shaft 105, which is provided midway with a worm gear 106. The worm gear 106 engages the teeth of the worm gear 107, which is at the upper end of vertical shaft 108, at the lower end whereof the pinion 36 meshes with the teeth formed on the ring 34 as best seen in Fig. 2 of the drawings.

When the driver moves the handle 117, on the steering post to rotate the shaft 113, the yoke 97 moves the clutch 92 into engagement with either of the bevel pinions 95 or 96. In correspondence with the engagement thus made, the wheel 100 and members operatively connected therewith, are rotated in relatively opposite directions. That is to say, if the said handle 117 be moved to one side of the median or neutral position, the shaft 108 and pinion 36 will rotate in one direction to drive the ring 34 and members connected therewith forming the fifth wheel of the vehicle, in one rotary direction, the traction wheels 20 accommodating the action. If the vehicle be standing still, the traction wheels 20 will track about the self-contained center of the tractor, which is as stated, coincident with the center of the spindle 63. If on the other hand, the handle 117 be moved to the opposite side, the opposite effect will be produced on the transmission gear between the wheel 100 and the pinion 36.

The shaft 105 is provided at its forward end with a second bevel wheel 109, the teeth of which bevel wheel engage the teeth of a relatively large bevel wheel 110. The wheel 110, (as best seen in Fig. 8 of the drawings) is fixed on a hollow shaft 111. The hollow shaft 111 extends upward through the tubular shaft 113. At the upper end of the hollow shaft 111 and fixedly mounted thereon, is a clutch head 114, with which the hub 115 of the hand wheel 116 engages when moved thereto.

Normally the vehicle in its travels is guided by the play of the hand wheel 116. The driver, by turning the said wheel, rotates the shaft 111 and wheel 110 connected therewith, and by means of the said wheel 110 and the wheel 109, rotates the shaft 105 and the worm gear 106 mounted thereon. The wheel 100 and pinions 95 and 96 running on their respective shafts, permit this action. The rotation of the vertical shaft 108 resulting from the play of the said wheel 116 turns the tractor on its center, to change the direction of movement thereof. The shaft 108 and pinion 36 are supported in service by the bearing 154, which bearing is mounted on the ring 38.

When it is desired to use power to turn the tractor, the steering handle 117 is employed. The handle 117 is suitably yoked to straddle a cam wheel 118, fixedly mounted on the shaft 119 extending between the sides of the yoke of the steering handle 117 to support a small hand wheel 120, which is slidably mounted on the shaft 119. The wheel 120 is provided with a clutch hub 121, the teeth whereof engage the teeth 122 on the handle 117 and are fixed relative to the shaft 119 to form a clutch member therefor. A spiral spring 123 normally presses inward the wheel 120 to cause the teeth of the hub 121 to engage the teeth 122 on the handle 117. The tension of the spring 123 is regulated by a nut 124 (see Fig. 9 of the drawings).

The handle 117 is fixedly attached by means of a key 125 to the tubular shaft 113. The shaft 113 has fixedly connected therewith and at the bottom thereof, a hub 126, from which extends the arm 127, (see Figs. 1, 3 and 8 of the drawings). The arm 127 is pivotally connected with a rod 128, which is pivotally connected with the hanging arm 129 dropped from the short rocking bar 99, (see Fig. 3 of the drawings). At the opposite end of the rocking bar 99 is hung the yoke 97.

It will be seen that to turn the shaft 105 without breakage while the wheel 109 is meshed with the wheel 110, the shaft 111 must be free to rotate. To avoid the distraction which would be occasioned by the wheel

116 rotating in correspondence with the shaft 111, the said wheel is lifted by means of the bell crank lever 131 until the hub 115 is disengaged from the clutch head 114. It is to accomplish this that I provide the handle wheel 120 and the cam wheel 118 on the shaft 119.

When the clutches 121 and 122 are not locked as shown in Fig. 9 of the drawings, it is obvious the shaft 119 may be rotated to force the cam wheel 118 against the hanging arm of the bell crank lever 131 to lift the other arm of the said bell crank lever, which is connected with the hub 115 by pins 132. The hand wheel 116 is thus lifted while the steering mechanism is being operated by power.

The operation of the steering mechanism by power is peculiarly advantageous when the tractor is standing still, as when for instance the vehicle is driven beside a curb and it is wished to turn the same on either of the rear trailer wheels as a pivot. Through the center of the hollow shaft 111 is a solid shaft 133. Fixedly attached to the upper end of the solid shaft 133 is a pointer 134. Upon the face or rim of the hand wheel 116, there is preferably secured a graduated scale, to be used in conjunction with the pointer 134 to indicate the angle of the set of the traction wheels 20 and the track therefor when operated either by power or by hand. The utility of this present mechanism is most appreciated, however, when operating the steering mechanism by power and when the vehicle to which the tractor is attached, is relatively still. The movement of the truck is through an arc of 240 degrees, but rarely if ever through the movement of a complete circle. To confine, however, the movement of the pointer 134 within reasonable limits, a reducing gear train, consisting of the pinion 135, the wheel 136, the pinion 137, the wheel 138, the pinion 139, the wheel 140, the pinion 141 and the wheel 142 is interposed between the said solid shaft 133 and the wheel 110, upon which the pinion 135 is fixed, while the wheel 142 is fixed upon the lower end of the shaft 133. The power drive of the steering mechanism rotates the wheel 110. The reduction of movement incident to the operation of the gear train above mentioned, is such that the swing of the solid shaft 133 is to the rotation of the wheel 110 relatively minute.

The tractor thus far described is intended to support the front end of a suitable vehicle, said vehicle being provided with a chassis having side bars 143, from which depend the shackle brackets 144 to receive the shackles 48, which are connected pivotally to said brackets by means of bolts 145, (see Figs. 11 and 12 of the drawings). The shackles 48, it will be remembered, are swung from the ends of the springs 46 which are seated upon the bed plate 39 and extend transversely across the tractor truck in front and at the rear of the angle bar structure. The extreme forward ends of the side bars 143 rest upon the spring 146, which spring is secured by means of clips 147 to the dropped center brace 76. A flange 148 integrally formed with the said brace supports the said spring. This spring 146 thus bearing under the ends of the side bars 143 operates as a shock absorber to prevent the uplift of the motor bearing end of the tractor. By thus uniting in service the tractor and the chassis of the trailer through the intermediary of the springs 46—46 and 146, the said union is eased or cushioned to avoid shocks and strains incident to the independent movement of either the tractor or the trailer.

As shown in Fig. 16 of the drawings, I sometimes extend the driving shaft 77 and connect it by means of a flexible joint, such as a knuckle 149 to a driving shaft 150, operatively connected with the rear axle section 151, by a differential gearing as contained in the case 152. If desired, the shaft 150 may be employed to operate, elevate or lift the mechanism used in conjunction with dumping carts and vehicles of like nature. In fact, the driving shaft 150 may be employed in any capacity for which it is suited, besides that of transmission to the traction axle 151. A chain speed gear box 153 is employed preferably when connected with the axle 151 of the trailer. It is to be understood that any form of speed control may be employed in connection with the direct drive of the tractor.

In the modified form of the invention as shown in Fig. 14 of the drawings, provision is made for an arrangement where it is inconvenient or impossible to connect the shaft 150 with the shaft 77, or with the steering mechanism operated through shaft 150 of the modified form, Fig. 14, which is hereinbefore referred to as shaft 105. In such cases, a short shaft 155 is rigidly connected with the shaft having the clutch 92. At the end of the shaft 155 a pinion 156 is mounted, the teeth whereof engage the teeth of a large gear wheel 157. The gear wheel 157 is rigidly connected with a pinion 158, concentric with the gear wheel 157, the teeth of which pinion are meshed with the teeth of a relatively large gear wheel 159. The gear wheel 159 is fixedly mounted on a shaft 160, which is substituted for the shaft 105 of the preferred form of mechanism, as seen best in Fig. 1 of the drawings. Slidably mounted upon and keyed to the shaft 160 is a clutch 161, said clutch having reversely-projected clutch teeth to engage clutch teeth with which bevel pinions 162 and 163 are provided. The

pinions 162 and 163 are meshed with a bevel wheel 164. The wheel 157 and pinion 158 are rigidly connected with a hollow connection tube 165. Preferably, the tube 165 has a passage rectangular in cross section, through which a squared end of the driving shaft 150, or other suitable substitute therefor, may be extended.

In Fig. 15 of the drawings is shown a vertical section of the screw bolt 65, showing the same to be preferably tubular. This construction is preferred as providing means for suitably carrying electric wires, steering gear, or other suitable mechanical parts connected with the operation of the invention and in which the ends are exposed above and below the fifth-wheel construction of the tractor, as herein described.

Claims:

1. A two-wheeled tractor, the wheels whereof are laterally alined; a rotary truck supported on said wheels; a relatively stationary body pivotally mounted on said truck; a motor mounted on said body; transmission mechanism operatively connecting said motor and wheels to rotate the same, said transmission mechanism embodying a vertical shaft coaxial with the pivot connection of said body; a plurality of bevel wheels mounted on said shaft, at the opposite ends thereof; a plurality of mated gear wheels mounted on the driving shaft of said motor to engage one of the gears on said shaft at opposite sides thereof; a clutch mechanism, embodying a clutch member mounted on the driving shaft of said motor and manually movable to engage the adjacent bevel wheel on said vertical shaft at opposite sides to reversely rotate said shaft; a plurality of springs interposed between the body of said truck and the wheels thereof; a plurality of springs supporting said motor and parts connected therewith, said springs being incorporated in the structure of said body; and a cushion spring for preventing the rebound of said motor and parts connected therewith, said spring being connected with the framework of said body.

2. A two-wheeled tractor, comprising a truck body; a carrying body; a motor mounted on said carrying body; a fifth-wheel construction partly mounted on said carrying body and partly mounted on said truck body; a plurality of carrying springs mounted on said fifth-wheel construction, disposed transverse to said carrying body, for supporting the chassis of a vehicle when operatively connected with said tractor; and a plurality of carrying springs for said truck body interposed between the carrying wheels and body of said truck body.

3. A two-wheeled tractor, comprising a truck body; a carrying body; a motor mounted on said carrying body; a fifth-wheel construction partly mounted on said carrying body and partly mounted on said truck body; a plurality of carrying springs mounted on said fifth-wheel construction, disposed transverse to said carrying body, for supporting the chassis of a vehicle when operatively connected with said tractor; a plurality of carrying springs for said truck body interposed between the carrying wheels and body of said truck body; and a platform spring mounted on said carrying body, and extending below the side bars of said chassis when operatively connected with said tractor, said platform spring being adapted to prevent violent lift of said carrying body.

4. A tractor having two carrying wheels; a truck mounted on said wheels; a body pivotally mounted on said truck; a prime mover mounted on said body; and a transmission mechanism connecting said prime mover and said carrying wheels to rotate the same, said transmission mechanism embodying a hollow vertical shaft co-axial with the pivot connection of said body and said truck having an integral hub and sleeve member exterior thereto provided with an annular flange intermediate of its length to support a third member and constituting said pivot connection.

5. A tractor having two carrying wheels; a truck mounted on said wheels; a body pivotally mounted on said truck; a prime mover mounted on said body; a fifth wheel, embodying a hollow hub and sleeve member, an annular flange integral therewith, a hollow shaft forming a pivot co-axial with said hub, sleeve and flange member, a third member co-axial therewith mounted thereon and constituting a pivotal support for said body on said truck; a transmission mechanism operatively uniting said prime mover and said carrying wheels, said transmission mechanism embodying a hollow shaft mounted in said hub to extend therethrough; and a steering mechanism, embodying means whereby one section of said fifth wheel may be rotated relative to the other section of said wheel.

6. A tractor having two carrying wheels; a truck mounted on said wheels; a body pivotally mounted on said truck; a prime mover mounted on said body; a fifth wheel supporting said body on said truck, embodying a relatively large gear toothed ring and a central hub having an annular flange to form a bearing co-axial and co-radial for a third member in pivotal relation therewith and constituting the pivotal means for a body so mounted; a transmission mechanism operatively uniting said prime mover and said carrying wheels, said transmission mechanism embodying a hollow shaft mounted in the said hub to extend therethrough, a steering mechanism embodying a gear pinion and engaging the teeth of

said ring; and manually operative means mounted on said body for rotating said pinion.

7. A tractor having two carrying wheels; a truck mounted on said wheels; a body pivotally mounted on said truck; a prime mover mounted on said body; a fifth wheel supporting said body on said truck, embodying a relatively large gear toothed ring and a central hub having an annular flange as support for a third member in a pivotal relation therewith; a transmission mechanism operatively uniting said prime mover and said carrying wheels, said transmission mechanism embodying a hollow shaft mounted in the said hub to extend therethrough; a steering mechanism embodying a gear pinion and engaging the teeth of said ring; and a power driving mechanism for rotating said gear toothed ring, said power driving mechanism embodying a train of gears operatively connecting said prime mover and said ring.

8. A tractor having two carrying wheels; a truck mounted on said wheels; a body pivotally mounted on said truck; a prime mover mounted on said body; a fifth wheel supporting said body on said truck, embodying a relatively large gear toothed ring and a central hub having an annular flange as support for a third member in a pivotal relation therewith; a transmission mechanism operatively uniting said prime mover and said carrying wheels, said transmission mechanism embodying a hollow shaft mounted in the said hub to extend therethrough; a steering mechanism embodying a gear pinion and engaging the teeth of said ring; a power driving mechanism for rotating said gear toothed ring, said power driving mechanism embodying a train of gears operatively connecting said prime mover and said ring; and means mounted in said power mechanism for at will changing the rotary direction of said transmission.

9. A tractor having two carrying wheels; a truck mounted on said wheels; a body pivotally mounted on said truck; a prime mover mounted on said body; a transmission mechanism connecting said prime mover and said carrying wheels to rotate the same, said transmission mechanism embodying a hollow vertical shaft co-axial with the pivot connection of said body and said truck; a plurality of bevel gear wheels mounted on said hollow vertical shaft at the opposite ends thereof; a plurality of mated gear wheels mounted on the driving shaft of said prime mover to engage one of said gear wheels on said vertical shaft and at opposite sides thereof; a clutch mounted upon the gear wheels on the driving shaft of said prime mover to at will engage the same to move with the driving shaft of said prime mover; and a central bolt embracing said pivotal transmission mechanism in a freely rotative relation.

10. A tractor having two carrying wheels; a truck mounted on said wheels; a body pivotally mounted on said truck; a prime mover mounted on said body; a transmission mechanism connecting said prime mover with said carrying wheels to rotate the same, said transmission mechanism embodying a hollow vertical shaft having bearings coaxial and coextensive with the pivot connection bearings of said body and said truck; a plurality of bevel gear wheels mounted on said vertical shaft at the opposite ends thereof; a plurality of mated gear wheels mounted on the driving shaft of said prime mover to engage one of said gear wheels on said vertical shaft and at opposite sides thereof; a clutch mounted upon the gear wheels on the driving shaft of said prime mover to at will engage the same to move with the driving shaft of said prime mover; and a manually operative mechanism for moving said clutch to engage at will one of the said wheels.

11. In a tractor as characterized, a two-wheeled truck; a body supported thereon; a prime mover carried by said body; a driving mechanism for said wheels; a gear and pinion connection for said body and said truck to rotate the truck in a self-contained center; a manual controlling mechanism for said gear and pinion, embodying a rotary pointer; and a reducing gear connecting said gear and pinion and said pointer as operative through the pivotal connections of said self-contained center.

12. In a tractor as characterized, a two-wheeled truck; a body pivotally mounted thereon; a power unit mounted on said body; a power mechanism for rotating said truck about a self-contained center; a pointer showing the operating position of said truck; and a reducing gear connecting said pointer and said truck to move the said pointer in correspondence with said truck, and manually operative from the disjoined motor connections with the said self-contained center.

13. A tractor having a body portion; a prime mover mounted on said body portion; a running gear pivotally mounted under said body portion and having driving wheels; a transmission mechanism operatively connecting said prime mover and said driving wheels, and embodying a hollow rotary shaft having gear wheels at each end, said shaft extending between said body portion and running gear and coaxial with the pivot of said running gear; and a central bolt embracing said pivotal transmission mechanism in a freely rotary relation, said mechanism incorporating means for self-lubrication.

14. A tractor having a body portion; a prime mover mounted on said body portion;

a running gear pivotally mounted under said body portion and having driving wheels; a transmission mechanism operatively connecting said prime mover and said driving wheels, and embodying a hollow rotary shaft having gear wheels at each end, said shaft extending between said body portion and running gear and coaxial with the pivot of said running gear; manually operative means for operatively connecting and disconnecting said prime mover and said driving wheels; and a central bolt embracing said pivotal transmission mechanism in a freely rotary relation, said mechanism incorporating means for self-lubrication.

15. A tractor having a body portion; a prime mover mounted on said body portion; a running gear having driving wheels; a fifth wheel operatively connecting said body portion and running gear; a rotary shaft disposed coaxial with said fifth wheel and having transmission gear wheels at the ends thereof, one of said wheels being operatively engaged with said prime mover, and the other of said wheels being operatively engaged with said driving wheels; manually operative means for at will operatively connecting and disconnecting said prime mover and said rotary shaft; and a central bolt embracing said pivotal transmission mechanism in a freely rotary relation, said mechanism incorporating means for self-lubrication.

16. A tractor having a body portion; a prime mover mounted thereon; a truck having two driving carrying wheels; a fifth wheel pivotally connecting said truck and body portion; and a transmission mechanism operatively engaging said prime mover and said driving wheels and embodying a hollow transmission shaft co-extensive with the main pivotal center as operatively mounted in said truck and said body portion, said hollow shaft being co-axial with said fifth wheel and co-extensive with the said pivotal center supplying effective means whereby to lubricate all pivotal points of contact therewith.

17. A tractor having a body portion; a prime mover mounted thereon; a truck having two driving carrying wheels; a fifth wheel having a hollow hub and sleeve portion pivotally connecting said truck and body portion co-extensive with the space between the gear wheels at either end thereof a transmission mechanism operatively engaging said prime mover and said driving wheels and embodying a hollow transmission shaft having a bearing co-axial with said hub and sleeve portion and extending therethrough and operatively mounted in said truck and said body portion, said shaft being co-axial with said fifth wheel; and means for at will reversely operatively connecting said transmission shaft and said prime mover to reversely rotate said driving wheels.

18. A central hub comprising upper and under co-axial and co-annular sections embodying hub sleeve and flanged portions and peripheral rings in reverse pivotal engagement; the upper section having bearings upon its upper face arranged at right angles to its longitudinal alinement adapted to receive and to rigidly support thereon spring members in combination therewith extended to receive and to resiliently support portions of a vehicle mounted thereon whereby road shock to the maximum portion of a lightly running, or loaded vehicle will be largely absorbed thereby.

19. A central hub comprising upper and under co-axial and co-annular sections embodying hub sleeve and flanged portions and peripheral rings in reverse pivotal engagement; the upper section having bearings upon its upper face arranged at right angles to its longitudinal alinement adapted to receive and to rigidly support thereon spring members in combination therewith extended to receive and to resiliently support portions of a vehicle mounted thereon whereby road shock to the maximum portion of a lightly running, or loaded vehicle will be largely absorbed thereby and injury avoided to delicate and accurately alined mechanism mounted upon that portion of a vehicle pivotally connected therewith.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN L. SENDERLING.

Witnesses:
E. F. MURDOCK,
G. H. EMSLIE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."