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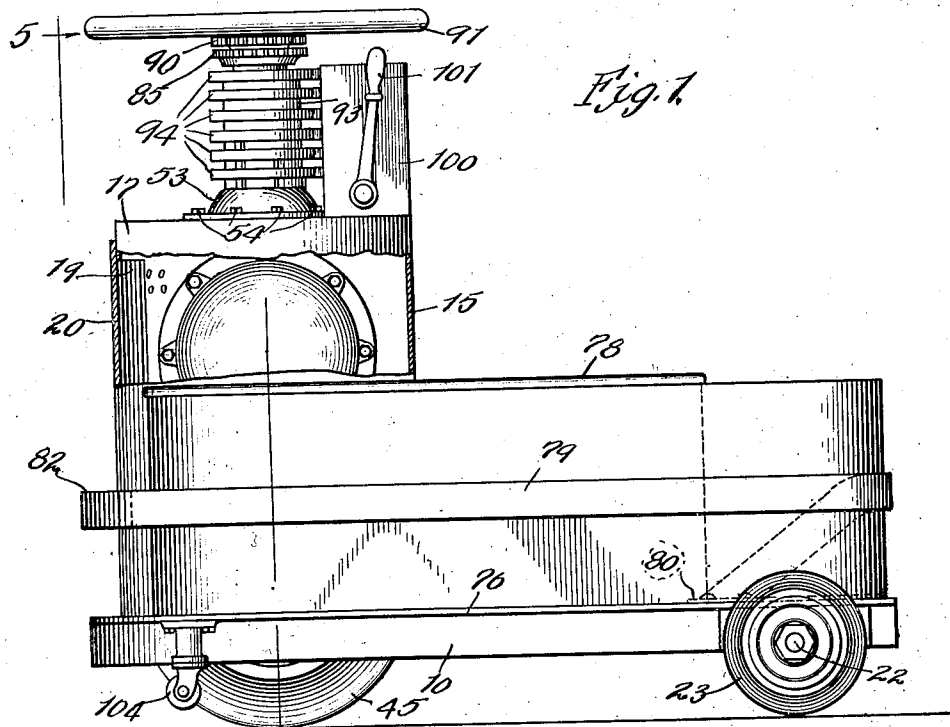


Fig. 1

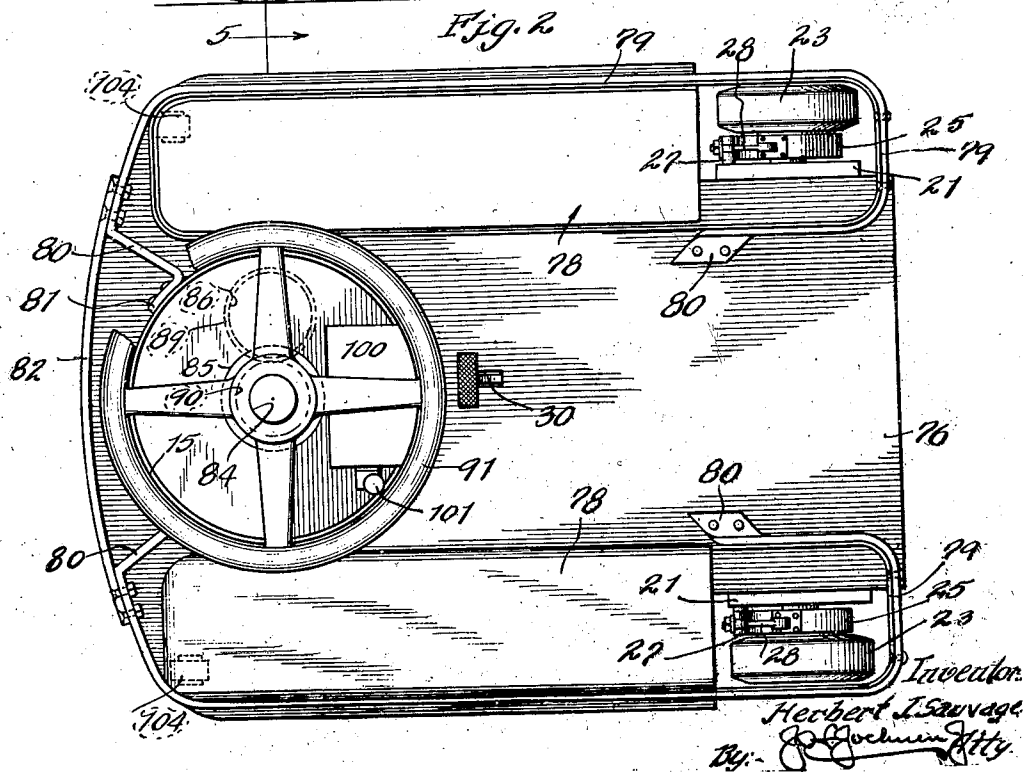


Fig. 2

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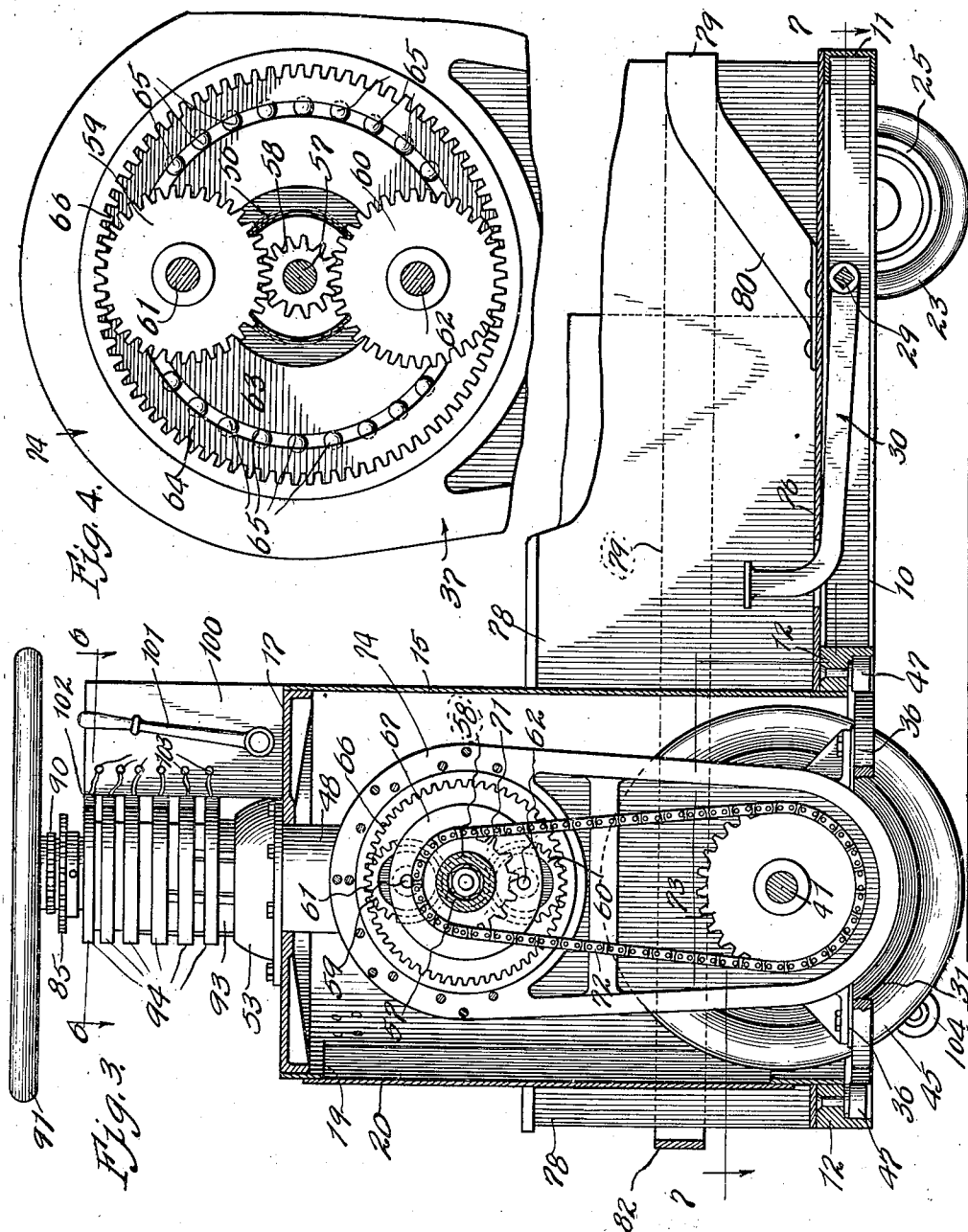
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TRACTOR.

APPLICATION FILED JUNE 16, 1917.

Patented July 20, 1920.

4 SHEETS—SHEET 2.

1,346,915.



INVENTOR.

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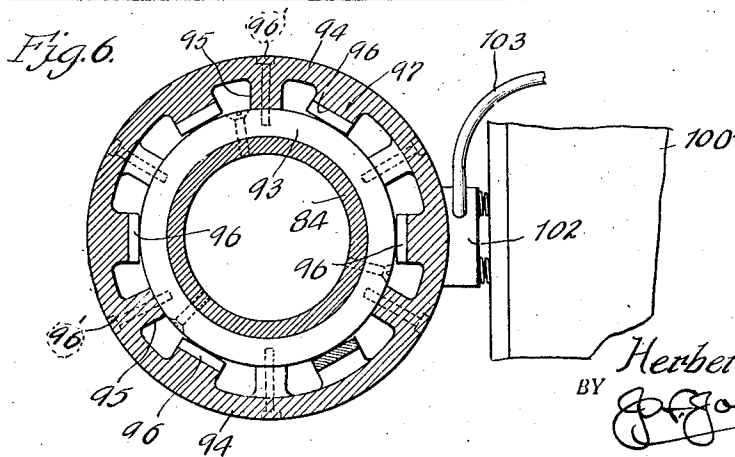
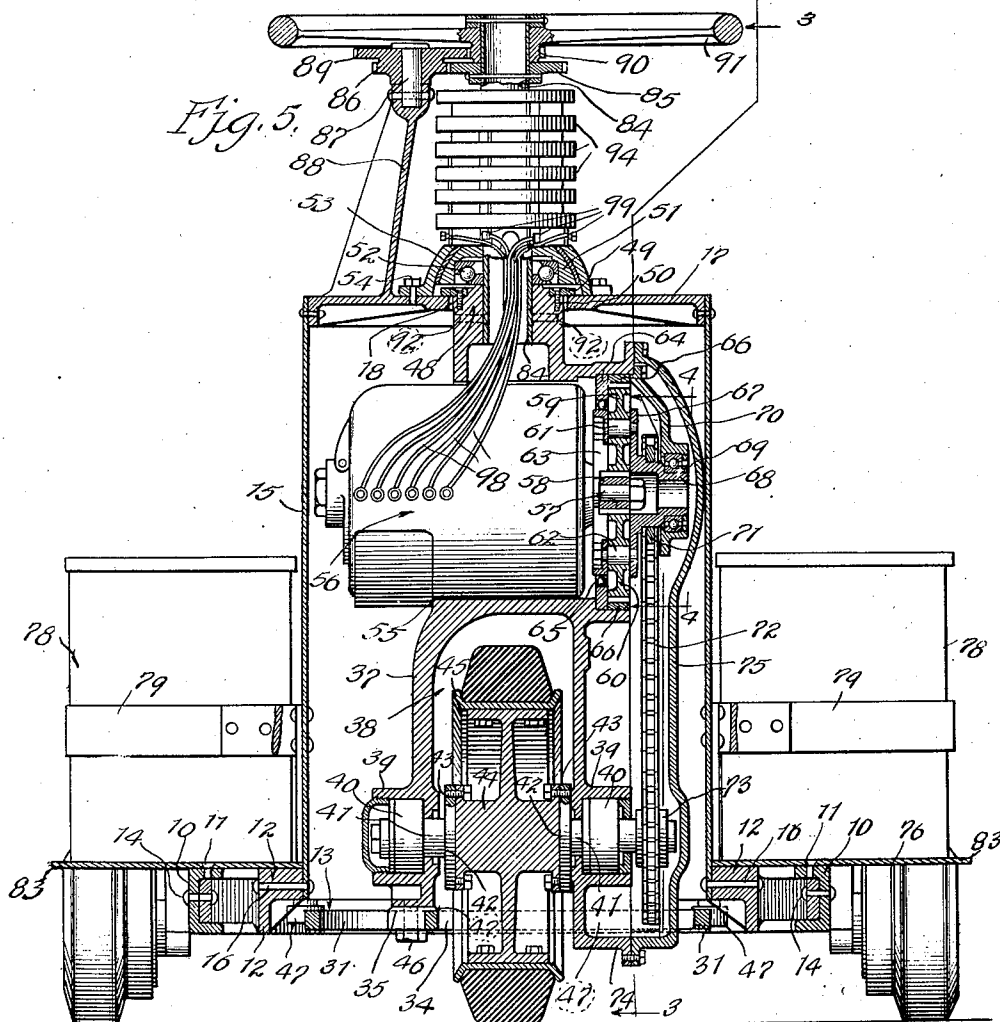
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4 SHEETS—SHEET 3.



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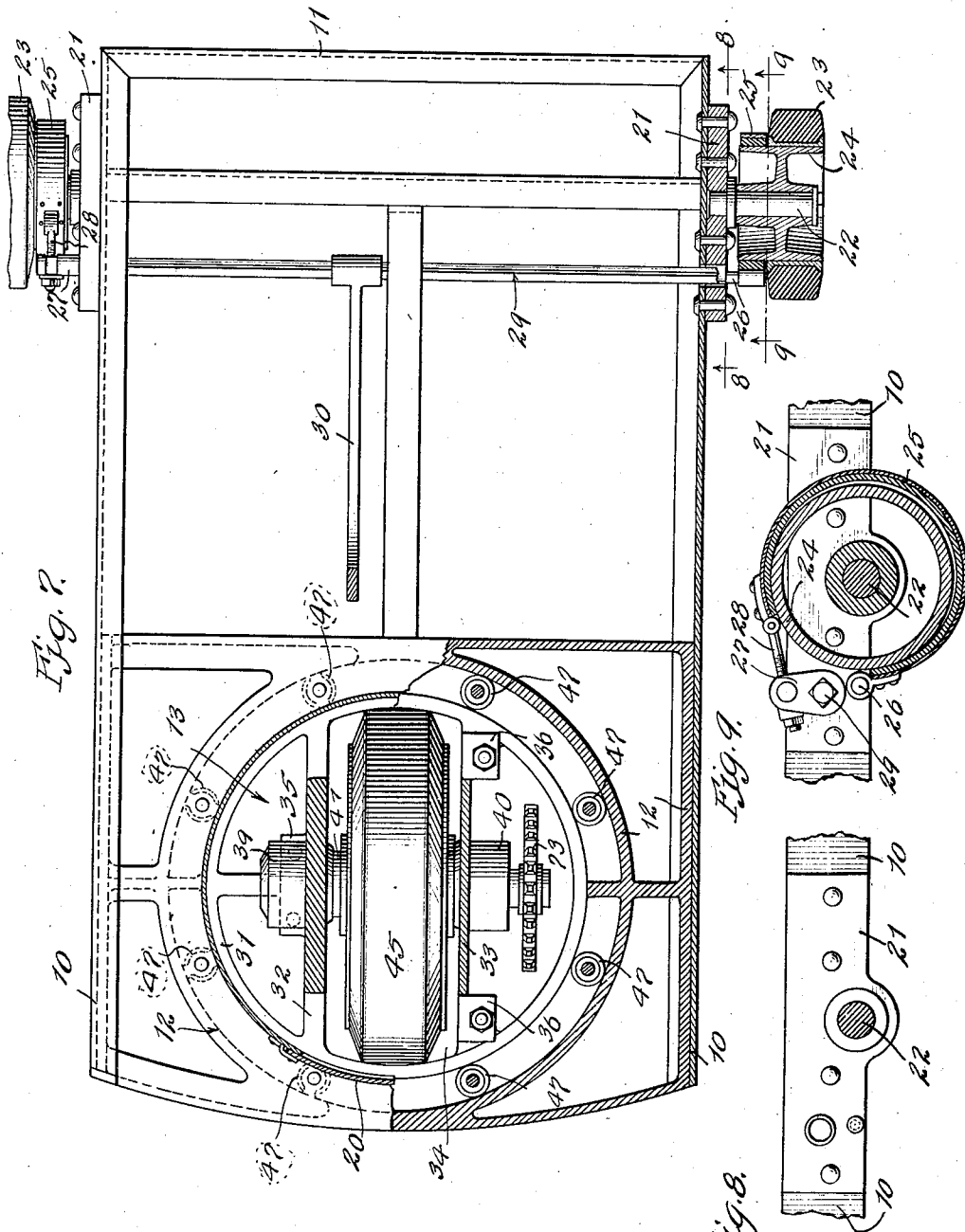
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

HERBERT J. SAUVAGE, OF CHICAGO, ILLINOIS.

TRACTOR.

1,346,915.

Specification of Letters Patent.

Patented July 20, 1920.

Application filed June 16, 1917. Serial No. 175,071.

To all whom it may concern:

Be it known that I, HERBERT J. SAUVAGE, a subject of the King of England, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tractors, of which the following is a specification.

This invention relates in general to improvements in motor vehicles, but more specifically to tractors of the three wheel type, especially designed for hauling heavy loads, such as in railroad and freight depots, baggage rooms, warehouses and for similar purposes, where it is at times necessary to operate and turn the tractor in a small or limited space, and one of the objects of the present invention is to improve and simplify a tractor of this character and at the same time construct the same so that it will not only be compact and strong in construction, and efficient in operation, but will be easy to control and operate.

A further object is to provide an improved tractor of this character wherein a single driving wheel is employed, the driving mechanism and gearing being adapted to be readily detached from the remaining structure, as a single unit, the operating parts being completely housed and protected.

A further object is to provide an improved tractor of this character so constructed that the greater part of the weight of the structure will be carried by a single driving wheel, and will be suspended from a point disposed above the wheel and the driving mechanism therefor.

A further object is to provide an improved tractor of this character having means whereby the tractor may be employed for pushing articles, and means whereby the tractor will engage the article at a low elevation from the supporting surface.

A further object is to provide an improved brake, and a still further object is to provide an improved construction of electric collector rings for the controller.

To the attainment of these ends, and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts, hereinafter more fully described and claimed and shown in the accompanying drawings illustrating the invention, and in which:

Figure 1 is a view partly in side elevation,

partly in section and partly broken away of an improved tractor of this character constructed in accordance with the principles of this invention.

Fig. 2 is a top plan view of the parts shown in Fig. 1.

Fig. 3 is a view taken on line 3—3, Fig. 5.

Fig. 4 is an enlarged detail view of the driving gear, and taken on line 4—4, Fig. 5.

Fig. 5 is a vertical sectional view taken on line 5—5, Fig. 1.

Fig. 6 is a horizontal detail sectional view taken on line 6—6, Fig. 3.

Fig. 7 is a sectional view taken on line 7—7, Fig. 3.

Fig. 8 is a detail view as taken on line 8—8, Fig. 7.

Fig. 9 is a sectional view taken on line 9—9, Fig. 7.

Referring more particularly to the drawings, the frame or body of the tractor may be constructed in any desired or suitable manner, but preferably by means of two channel bars 10 forming the side members thereof, the rear of these members 10 are connected by a cross bar or member 11 and arranged between the front ends of the members is a member 12, preferably in the form of a casting which is provided with an opening 13 at the center thereof. The sides of this member 12 project into the channel members 10, as shown more clearly in Fig. 5 and the parts are fastened together in any suitable manner such as by means of fastening bolts or rivets 14. Surrounding the opening 13 in the member 12 is a casing 15 which may be constructed of any suitable material, such as sheet metal, and the lower extremity of this casing projects into the opening 13 and is secured in position preferably by means of fastening bolts or devices 16, and the casing thus formed projects for any suitable distance above the platform of the tractor. The upper end of the casing is closed by a suitable member 17, to which the casing is secured and this member 17 is provided with an opening 18 for a purpose to be hereinafter set forth. The casing is also provided with a suitable door opening 19 adapted to be closed by a closure 20, and through which door opening access may be readily had to the driving mechanism.

Secured to the members 10, preferably adjacent the rear thereof, are suitable bearing plates 21 in which are journaled stub-axles 22, carrying wheels 23, and connected with

the hubs of these wheels are brake applying surfaces 24, around which surface a suitable band brake 25 passes. One end of the brake 25 is anchored as at 26 and the other end thereof is connected with a crank arm 27, by means of a suitable adjustable connection 28. These crank arms 27 are connected with a rod or beam 29, the latter passing through suitable bearings in the members 21, and being angular in cross section, so as to secure the crank arms 27 thereto for operation therewith. This brake beam is constructed of flexible or spring material so as to equalize the tension on the brake shoes or bands 25, and thereby dispense with all equalizing springs heretofore necessary with the brake beams or shafts. An operating lever or treadle 30 is provided for actuating the brake shaft 29 to apply the brakes. Arranged within the opening 13 of the member 12, is a supporting member 31, preferably in the form of a casting and having spaced walls 32, 33 to form a central opening 34, and the member 32 is provided with a supporting surface 35, while the member 33 is provided with the supporting surfaces 36. An upright designated generally by the reference numeral 37 is provided with a downwardly opening chamber 38, adjacent its base, the walls of the chamber being provided with the boxes 39 to receive the bearings 40, carrying stub shafts 41. These shafts extend through the walls of the chamber and are each provided with a flange 42 on their inner ends, and these flanges 42 are secured by means of suitable fastening devices 43, to the faces of the hub 44 of the wheel 45. The chamber 38 in the member 31 registers with the space 34 in the member 31, and the upright is supported by the faces 35, 36 and secured thereto by suitable fastening devices 46.

The external diameter of the member 31 is somewhat less than the interior diameter of the member 12, and anti-friction rollers 47 are journaled to the member 12 and disposed between the members 12 and 31 to hold the member 31 in position and to take up the lateral thrust of the parts.

The upper extremity 48 of the upright 37 is of a size and somewhat less than the diameter of the opening 18 in the member 17, so as to form a space therebetween, and a washer or member 49 surrounds the upper extremity 48 of the upright and is secured thereto as at 50. This member 49 extends over the opening 18 in the member 17 and serves as a means for securing the upright and its attached parts from separation or from being detached from the member 17, yet the extremity 48 turns freely in the opening 18 to permit the wheel 45 to be switched with respect to the platform and the casing 15.

Supported by the extremity 48 of the up-

right is a bearing member 51 and, interposed between this member 51 and the upright is a ball bearing 52, both arranged preferably above the member 17 of the casing 15. A cap 53 is removably secured to the member 17 by means of the fastening devices 54, and this cap member 53 serves to hold the bearing members in position with respect to the member 17, so that the end of the upright will turn in the bearings when the wheel 45 is shifted, and the end thrust of the upright will be received by the bearings.

It will be noted that in this construction and as the wheel 45 rests upon the surface of the ground or floor, the greater portion of the weight of the structure will be exerted upon the upright 37 and wheel 45, and the weight of the platform and body of the mechanism will be suspended from a single point, located above the traction wheel 45. The upright 37 is provided with an opening 55 within which is arranged a motor 56. The shaft 57 of the motor has secured to it a gear wheel 58 to rotate therewith, and this gear wheel meshes with idle gears 59, 60, mounted respectively upon shafts 61, 62, which latter are connected with a bearing member 63 that coöperates with a companion bearing member 64, having balls 65 arranged therebetween. The idle gears 59, 60 are arranged within an internal toothed member 66 which is secured to the upright 37 against rotation, so that when the shaft 57 rotates, the gear 58 will be rotated thereby, and this gear will in turn impart a rotary motion to the gears 59, 60 about their axes, and inasmuch as these gears 59, 60 mesh with the stationary internal toothed gear 66, it will be manifest that these gears 59, 60 will be given a bodily rotation about the shaft 57. The free ends of the shafts 61, 62 have bearings in a member 67, which member is reduced to form a journal 68 operating in a bearing 69, which latter is mounted in a support 70 connected with the upright 37. The journal 68 is arranged in alinement with the shaft 57 and has connected with it, to rotate therewith, a sprocket gear 71 over which a sprocket chain 72 passes, and which sprocket chain also passes over a sprocket wheel 73 on the shaft 41 of the wheel 45, for transmitting the motion of the motor 56 to the traction wheel 45. The upright 37 on the side thereof adjacent the gearing just described, is provided with a flange 74 extending therearound and a cap member 75 is removably secured to the flange 74, and coöperates therewith to form a liquid tight casing in which the gearing and the sprockets as well as the sprocket chain are arranged, so that the chamber may be filled with oil in which the parts are adapted to operate.

It will be manifest that with this construction of gearing and with the motor arranged in the manner shown, ready access

may be had to the gearing, after the steering head has been detached from the rest of the mechanism and the motor may also be readily removed from the upright.

5 Secured to the framework formed by the side members and end members 11 and 12, is a platform 76 which may be of any desired size and configuration and constructed of any suitable material. This platform is preferably secured to the frame work by 10 suitable fastening devices 77 passing there-through and into the member 10, and the platform is preferably of a width to project slightly beyond the outer face of the rear wheels 23.

Receptacles 78, suitable for receiving the batteries, are arranged upon the platform on opposite sides of the steering head and are preferably of a length to extend substantially the length of the tractor body. Extending along the sides of the receptacle 78 are bumper members 79 which may be constructed of any suitable material. One extremity of each of these members is secured 25 as at 80 to the platform 76, and the members 79 themselves are located preferably at some distance above the platform and are secured directly to the receptacles, whereby the bumpers will be reinforced or strengthened by the receptacles. The forward ends 30 of the members 79 extend around the receptacles 78 to project a short distance in advance of the front of the receptacles, and the extremities of these members are deflected toward the casing 15 as at 80, and are secured as at 81 to the casing on opposite sides of the center of the tractor. A 35 connecting member 82 extends across the space between the forward ends of the members 78 and in advance of the steering head, and is secured to the members 79.

This member 79 and the connecting member 82 serve the purpose of bumpers, so that when it is desired to shove an article upon 45 the floor or ground, all that is necessary is to drive the tractor against the article so that the members 79 or 82 strike the article and the article will be moved or shifted.

The outer edges of the platform 76, at 50 the sides of the machine project a short distance beyond the outer face of the member 79 as at 83, and inasmuch as this projecting edge of the platform is located in close proximity to the ground, it will be manifest that 55 when the tractor is moved into engagement with an article, to shift the latter, the article will be engaged at a low point with respect to the ground, so that when the article is moved, its tendency to tip over will be 60 avoided, yet if the article should tip over, it will strike the bumper members 79 at the side of the tractor.

Extending through the extremity 48 of the upright 37 and having connection with 65 the opening in which the motor 56 is located,

is an upright tubular member 84, which extends for any desired distance above the member 17 of the casing 15, and secured to the tubular member 84 adjacent the upper end thereof is a gear wheel 85 which meshes 70 with a gear 86 rotatable about a bearing 87 connected with a suitable support 88, and connected with the gear 86 to rotate therewith is another gear 89 which meshes with a gear 90 that is connected with a tiller or 75 steering wheel 91 for rotation therewith. The steering wheel 91 is connected with the upper extremity of the tubular member 84 to rotate independently thereof. It will thus be seen that when the wheel 91 is rotated, this motion will be imparted by means 80 of the gear 90 to the gear 89, 86 and thence to the gear 85 which latter is secured to the tubular member, and which tubular member is secured as at 92 with the upright 37, so 85 as to turn the wheel 45 with respect to the casing and the platform of the tractor. A tubular fiber insulating member 93 surrounds and is secured to the tubular member 84, above the member 17 of the casing 90 and secured to this insulating member 93 are a series of collector rings 94, which are spaced from each other longitudinally of 95 the tubular member 84 and are of an internal diameter somewhat greater than the exterior diameter of the insulating member 93. Projecting inwardly from each of the rings 94 are a series of lugs 95, through which suitable fastening devices 96' pass to engage the insulating member 93 for securing 100 the collector rings in position.

Conductor members 96 preferably comprising copper strips are provided, one for each of the rings 94, and these copper strips are preferably secured to a projection 97 on 105 the respective rings 94; and the strips 96 are spaced radially from each other, and are so arranged that each of the strips is of a different length extending from a point adjacent the bottom of the series of collector 110 rings to and contacting with only one of the collector rings.

The conductors 98 which are connected with the motor 56 extend through the tubular member 84 and are connected as at 99 115 with the respective strips 96, preferably at the lower extremity of the series of collector rings.

A controller 100 is provided and located in any suitable or convenient position for the 120 operator, preferably beneath the steering wheel 91 and preferably resting upon the top member 17 of the casing 15. This controller is provided with an operating lever 101, which in turn controls the circuit 125 through a series of brushes 102, one of which is provided for each of the collector rings 94, and the brushes are each provided with a conductor 103 for connecting the same with the controller.

In operation the operator will stand upon the platform of the tractor and by means of the wheel 91 and the controller lever 101 can control the speed and the direction of movement of the tractor.

When it is desired to gain access to the gearing all that is necessary is to switch the tractor wheel 45 about an upright axis, so as to bring the cap 75 of the gear casing adjacent the door opening 19 of the casing 15, and then after the cap has been removed, the gearing will be exposed. When it is desired to remove the steering post, including the traction wheel 45, the motor and gearing, the tiller wheel 91 is first removed, the insulating member 93 loosened, and then the body of the tractor may be elevated, so that all of the steering head mechanism may be removed as a unit, or the tractor may be moved so that the steering head mechanism will be positioned over a pit, which will permit the steering head to be lowered from the machine.

With this improved construction, it will also be manifest that the tractor may be turned and manipulated in a very small area, and inasmuch as the platform is located in close proximity to the ground, it is impossible for the tractor to topple over. If desired casters 104 may be provided, and secured to the frame-work at points in advance of the axis of the traction wheel 45, so that in the event that the tractor strikes high places, which would tend to lower the front end of the tractor, the weight will be received by the casters.

When it is desired to remove the traction wheel 45 all that is necessary is to remove the fastening devices 43 after which the wheel may be readily displaced.

What is claimed as new is:

1. A motor vehicle embodying a supporting structure, an upright frame, a traction wheel journaled to the frame, a motor for driving the traction wheel, said motor being supported by the frame, a bearing disposed between the frame and the said structure adjacent the upper end of the frame for receiving the end thrust of the frame and for supporting the said supporting structure, and a lateral thrust bearing disposed between the said supporting structure and frame and spaced from the first recited bearing, said motor being disposed above the said traction wheel and intermediate the said bearings.

2. A motor vehicle embodying a supporting structure, an upright frame, a traction wheel journaled to the frame, a motor for driving the traction wheel, said motor being supported by the frame, a bearing disposed between the frame and the said structure adjacent the upper end of the frame for receiving the end thrust of the frame and for supporting the said supporting structure,

and a lateral thrust bearing disposed between the said supporting structure and frame and spaced from the first recited bearing, said motor being disposed above the said traction wheel and intermediate the said bearings, said frame, traction wheel and motor being adapted for a complete rotation about an upright axis with respect to the supporting structure and detachable as a unit from the said supporting structure.

3. A device of the character described, embodying a wheel supported platform, laterally spaced battery receptacles mounted thereon adjacent the sides of the platform, and extending lengthwise of said sides, and a bumper element secured to the receptacles and extending across the space between the receptacles and beyond one end of the receptacles.

4. A motor vehicle embodying a platform having an opening therein, a traction wheel operating in the opening, battery receptacles secured to the platform, and located on opposite sides of the opening, and a bumper element supported by the receptacles.

5. A motor vehicle embodying a platform having an opening therein, a traction wheel operating in the opening, battery receptacles secured to the platform, and located on opposite sides of the opening, and a bumper element supported by the receptacles, said bumper element extending transversely of the space between the receptacles and at one end of the said receptacles.

6. A motor vehicle embodying a supporting structure, a traction wheel, means mounting the wheel for rotation about horizontal and upright axes, with respect to the supporting structure, said means embodying a standard, an end thrust bearing between the supporting structure and upper portion of the standard, a lateral thrust bearing between the supporting structure and the lower portion of the standard, a motor for driving the traction wheel and supported by the standard, above the traction wheel, a portion of the standard having a lateral flange to form a chamber, gearing between the motor and traction wheel and disposed within the chamber, and a closure plate cooperating with the said flange to form with the standard a liquid tight lubricant chamber.

7. A motor vehicle embodying a supporting structure, a traction wheel, means for mounting said wheel for rotation on upright and horizontal axes with respect to the said supporting structure, said means embodying a standard, end thrust and lateral thrust bearings between the supporting structure and standard, a motor for driving the traction wheel, mounted upon the standard above the traction wheel, and between the said bearings, electric collector rings connected with the standard, an electric controller, brushes intermediate the rings and

controller, and steering means connected with the said standard.

8. A motor vehicle embodying a supporting structure, a traction wheel, means mounting said wheel for rotation on upright and horizontal axes, said means embodying a standard, means for moving the standard about an upright axis, said standard embodying spaced walls between which the traction wheel is arranged, alined bearings in opposite walls, journals mounted in the bearings and projecting into the space between the walls, flanges on the journals within the space, said flanges abutting the hub of the traction wheel on opposite sides of the wheels, and fastening means engaging the said flanges and the respective adjacent ends of the wheel hub for removably securing the traction wheel in position.

9. A motor vehicle embodying a supporting structure, a traction wheel, means mounting said wheel for rotation about horizontal and upright axes, said means embodying a standard, a motor for driving the traction wheel and supported by the standard, end thrust and lateral thrust bearings between the standard and said supporting structure, and steering means embodying a gear fixedly connected with the standard, a steering wheel loosely connected with the standard, intermediate gearing between the steering wheel and the first said gear, said intermediate gearing being independent of the standard, and means forming a support and bearing for the said intermediate gearing.

10. A motor vehicle embodying a supporting structure, a traction wheel, means mounting said wheel for rotation about horizontal and upright axes, said means embodying a standard, a motor for driving the traction wheel, and supported by the standard, and steering means for the standard, said steering means embodying a gear fixedly connected with the standard, a steering wheel loosely connected with the standard, intermediate gearing between the steering wheel and the first said gear, said intermediate gearing being independent of the standard, and means forming a support and bearing for the said intermediate gearing.

11. A motor vehicle embodying a wheel supported platform arranged at a low elevation and having an opening therethrough, a motor driven traction wheel operating in said opening, means supporting said wheel for rotation about upright and horizontal axes, said means embodying a standard, projecting above the platform, a casing projecting above the platform and housing the standard and traction wheel, end thrust and lateral thrust bearings between the standard and casing, a motor for driving the traction wheel and supported by the standard, said platform projecting laterally beyond the

casing, and battery receptacles supported by the platform on opposite sides of the casing.

12. A motor vehicle embodying a wheel supported platform arranged at a low elevation and having an opening therethrough, a motor driven traction wheel operating in said opening, means supporting said wheel for rotation about upright and horizontal axes, said means embodying a standard, projecting above the platform, a casing projecting above the platform and housing the standard and traction wheel, end thrust and lateral thrust bearings between the standard and casing, a motor for driving the traction wheel and supported by the standard, said platform projecting laterally beyond the casing, battery receptacles supported by the platform on opposite sides of the casing, and a bumper member extending across the spaces between the ends of the said receptacles and in advance of the said casing.

13. A motor vehicle embodying a wheel supported platform arranged at a low elevation and having an opening therethrough, a motor driven traction wheel operating in said opening, means supporting said wheel for rotation about upright and horizontal axes, said means embodying a standard, projecting above the platform, a casing projecting above the platform and housing the standard and traction wheel, end thrust and lateral thrust bearings between the standard and casing, a motor for driving the traction wheel and supported by the standard, said platform projecting laterally beyond the casing, battery receptacles supported by the platform on opposite sides of the casing, and a bumper encompassing the receptacles above the platform and projecting across the space between the ends of the receptacles and in advance of the said casing.

14. A motor vehicle embodying a wheel supported platform arranged at a low elevation and having an opening therethrough, a motor driven traction wheel operating in said opening, means supporting said wheel for rotation about upright and horizontal axes, said means embodying a standard, projecting above the platform, a casing projecting above the platform and housing the standard and traction wheel, end thrust and lateral thrust bearings between the standard and casing, a motor for driving the traction wheel and supported by the standard, said platform projecting laterally beyond the casing, battery receptacles supported by the platform on opposite sides of the casing, and bumpers extending along the outer sides of the said receptacles, the side edges of the said platform projecting laterally beyond the side faces of the said bumper member.

15. A motor vehicle embodying a wheel supported platform arranged at a low elevation, a motor driven traction wheel, means

supporting the traction wheel for rotation about upright and horizontal axes, the said means embodying an upright driving structure projecting above the platform, means
5 for controlling the driving structure, bumpers, and means supporting the bumpers to extend lengthwise of the side edges of, and spaced above the platform, the outer face of the bumper being disposed within the
10 plane of the side edge of the structure.

16. A motor vehicle embodying a wheel supported platform arranged at a low elevation, a motor driven traction wheel, means supporting the traction wheel for rotation
15 about upright and horizontal axes, the said means embodying an upright driving structure projecting above the platform, means for controlling the driving structure, bumpers, and means supporting the bumpers to
20 extend lengthwise of the side edges of, and spaced above the platform, the outer face of the bumpers being disposed within the side edge of the structure, a portion of said bumpers extending across the front of the
25 vehicle, above the platform and in advance of the said driving structure.

17. A motor vehicle embodying a wheel supported platform arranged at a low elevation, a traction wheel, means embodying
30 a standard mounting the traction wheel for rotation about upright and horizontal axes, a motor for driving the traction wheel and supported by the standard, a casing rising above the platform and housing the stand-
35 ard, motor and traction wheel, an end thrust bearing between the casing and one end of the standard, a lateral thrust bearing between the standard and casing, a portion of the standard projecting beyond the top of
40 the casing, a steering wheel operatively connected with the standard, an insulating element encompassing and secured to the portion of the standard which projects beyond the casing, electric collector rings secured
45 to the insulating element, conductors between the motor and the respective collector rings, and controller brushes individual to the collector rings.

18. A motor vehicle embodying a driving
50 motor, a casing housing the motor, a plurality of spaced collector rings, a support for the rings, insulating material disposed between the rings and support, conductor elements individual to the rings, said con-
55 ductor elements being arranged within the rings, one of the conductor elements being secured to each of the rings, means individual to the rings for holding the respective conductor element out of contact with
60 the other collector rings, means electrically connecting the motor with the respective conductor elements, and brushes cooperating with the collector rings.

19. A motor vehicle embodying a driving motor, a casing housing the motor, a plu- 65
rality of spaced collector rings, a support for the rings, insulating material disposed between the rings and support, conductor elements individual to the rings, said con-
70 ductor elements being arranged within the rings, one of the conductor elements being secured to each of the rings, means embodying a lug on the inner face of each of the rings to which the respective conductor element is secured, said lug being arranged out 75
of longitudinal alinement for holding the respective conductor element out of electrical connection with the other rings, means electrically connecting the conductor elements with the motor, and brushes cooperating 80
with the said collector rings.

20. A motor vehicle embodying a driving motor, a casing housing the motor, an electrical collector embodying an insulating support, collector rings secured to the sup- 85
port and spaced from each other longitudinally of the support, there being an inwardly projecting lug connected with each of the rings, said lugs being disposed out of alinement, a conductor element secured to 90
each of the lugs and arranged within the rings, additional conductors connected with the first recited conductor elements, and brushes contacting with the outer surface of the said collector rings. 95

21. A motor vehicle embodying a wheel supported platform, a traction wheel, means embodying a standard mounting the traction wheel for rotation about upright and horizontal axes, a supporting casing connected with the platform and housing the 100
standard, an end thrust or supporting bearing between the casing and standard and at the upper end of the casing, a lateral thrust bearing between the platform and standard, 105
a motor mounted upon the standard and between the bearings, and a drive connection between the motor and traction wheel.

22. A motor vehicle embodying a wheel supported structure, a traction wheel, driv- 110
ing mechanism for the traction wheel and spaced superposed bumper elements extending lengthwise of the side of the structure, the outer face of the upper bumper element being disposed in a plane laterally spaced 115
from the plane of the outer face of the lower bumper element.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 9th day 120
of June, A. D. 1917.

HERBERT J. SAUVAGE.

Witnesses:

FRANK N. REED,
J. H. JOCHUM, Jr.