Sept. 23, 1958 T. B. HOWARD 2,852,888

POWER-DRIVEN REMOTE-CONTROLLED TOY VEHICLE

Filed Aug. 17, 1956

4 Sheets-Sheet 1

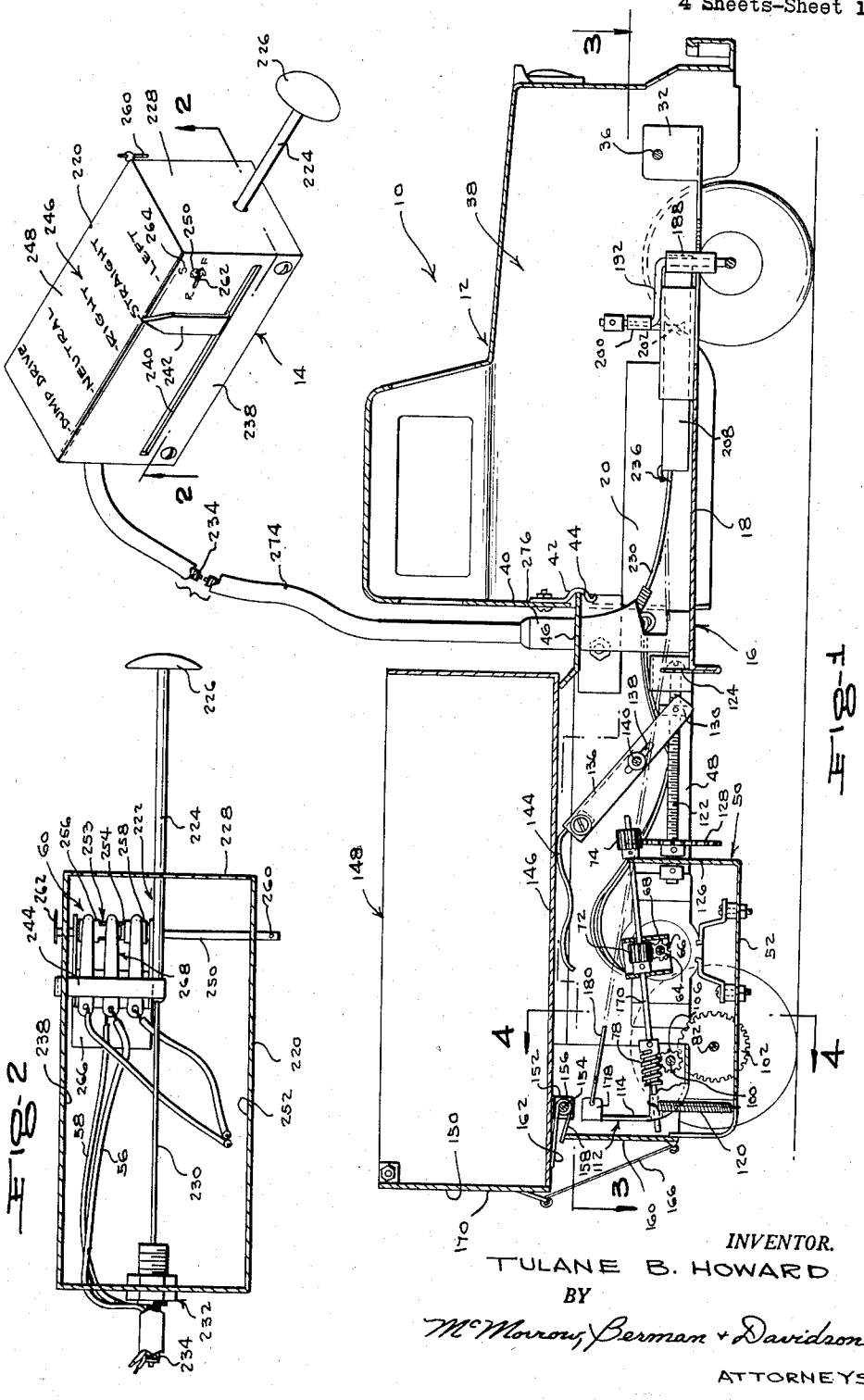


FIG. 1

FIG. 2

INVENTOR.
TULANE B. HOWARD
BY
McMorrow, Berman & Davidson
ATTORNEYS

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FIG-6C

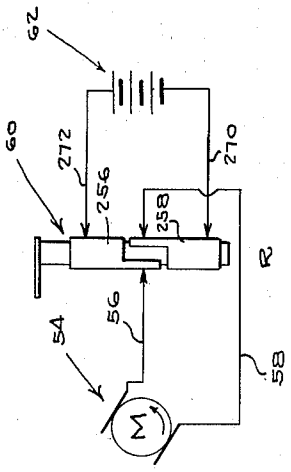


FIG-6B

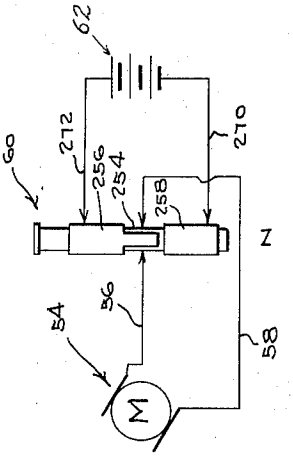


FIG-6A

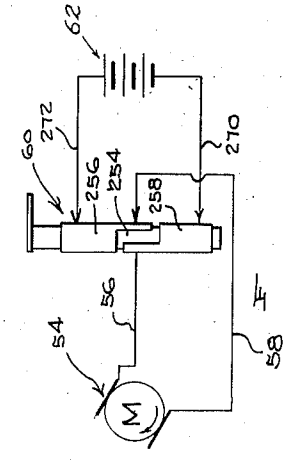
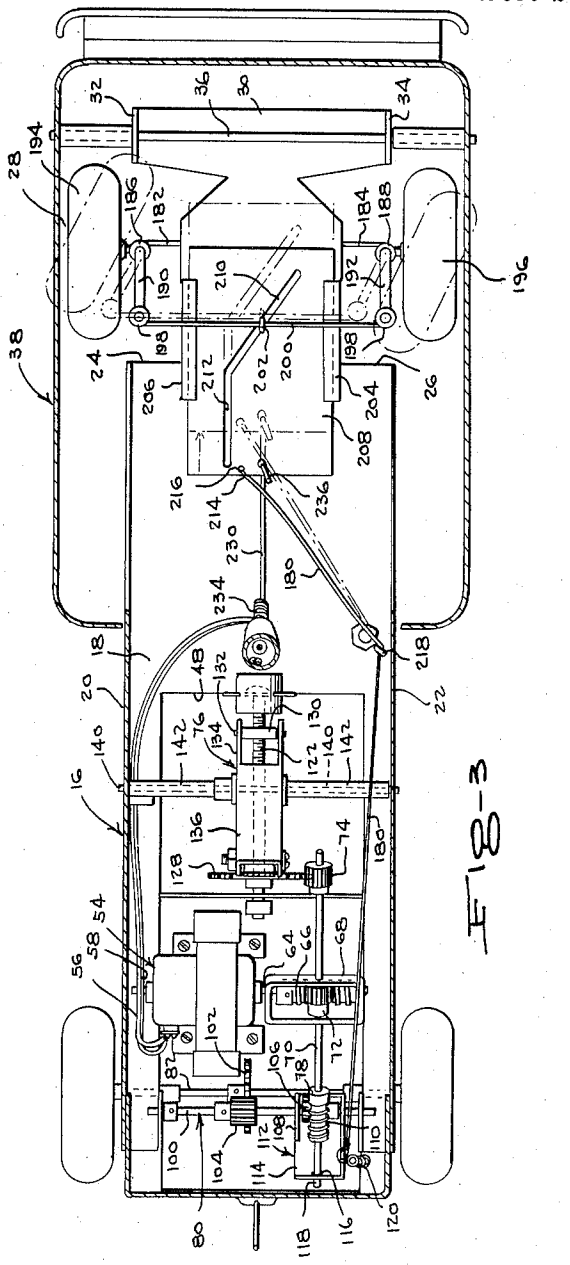


FIG-3



INVENTOR.

TULANE B. HOWARD

BY

McMorrow, Berman & Davidson

ATTORNEYS

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POWER-DRIVEN REMOTE-CONTROLLED TOY VEHICLE

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Fig-4

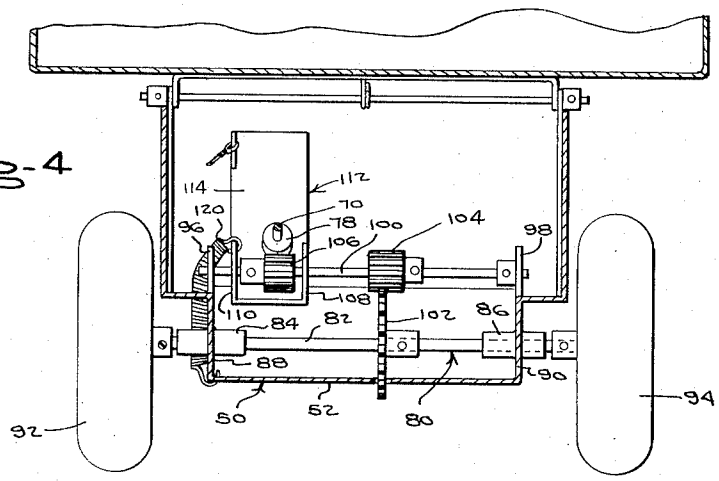
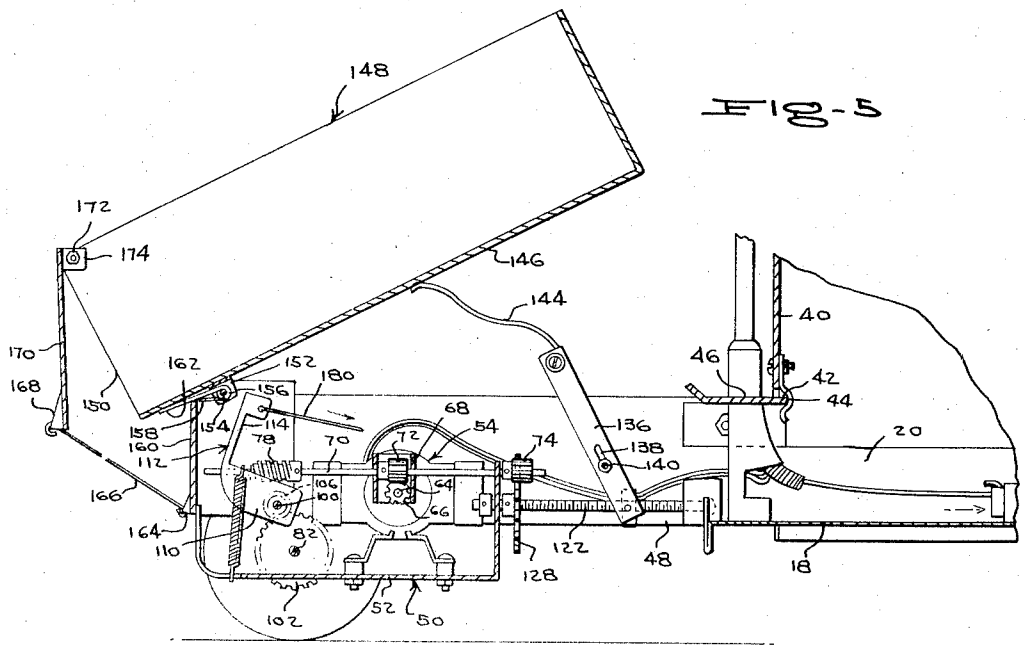


Fig-5



INVENTOR.

TULANE B. HOWARD

BY

McMorrow, Berman & Davidson

ATTORNEYS

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POWER-DRIVEN REMOTE-CONTROLLED TOY VEHICLE

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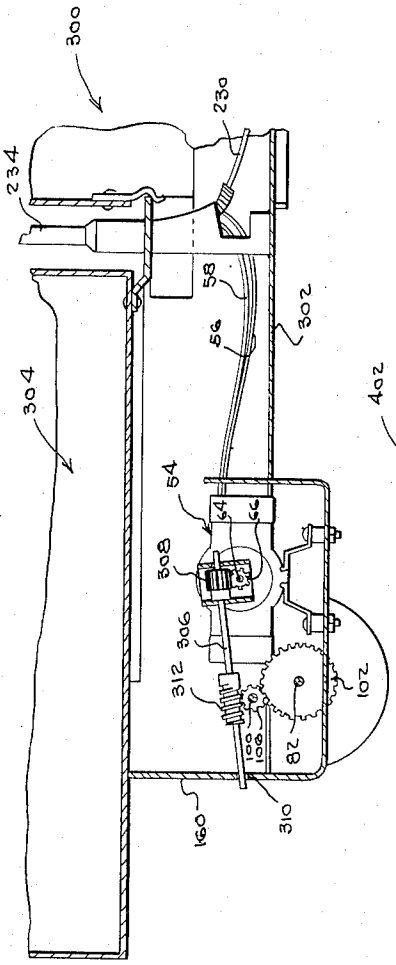


FIG-7

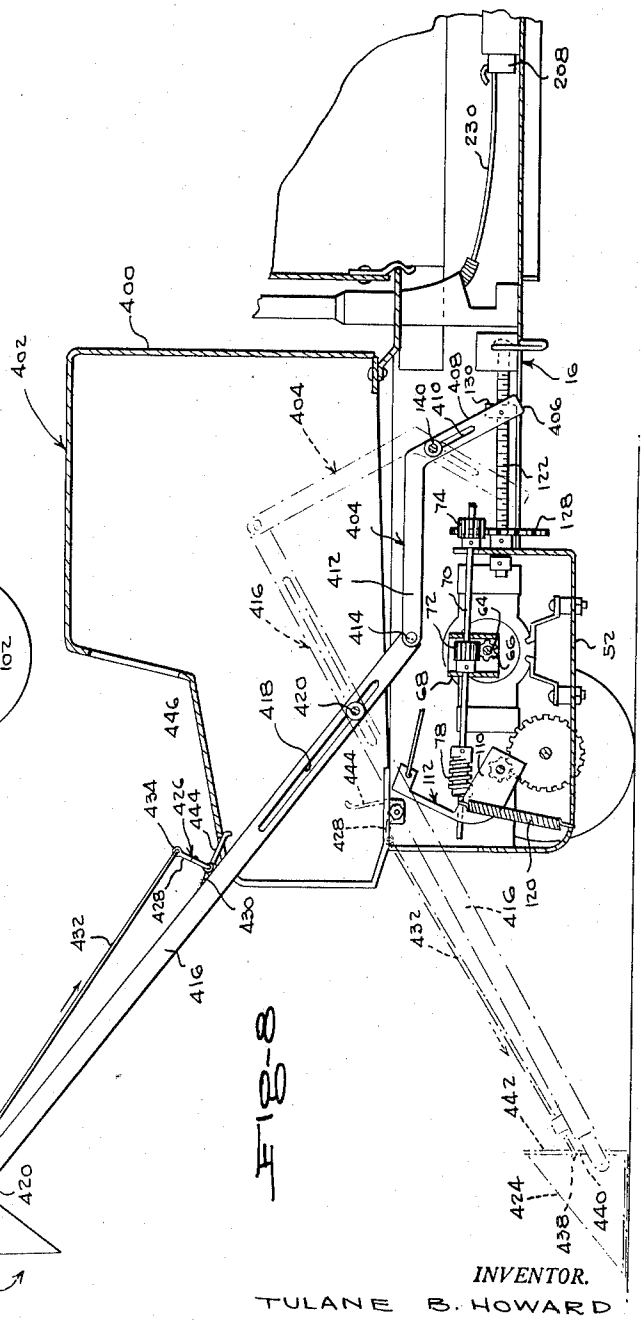
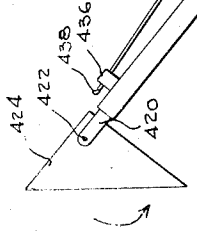


FIG-8



INVENTOR.
TULANE B. HOWARD
BY

McMorrow, Berman & Davidson
ATTORNEYS

United States Patent Office

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POWER-DRIVEN REMOTE-CONTROLLED TOY VEHICLE

Tulane B. Howard, Washington, D. C.

Application August 17, 1956, Serial No. 604,320

4 Claims. (Cl. 46—244)

This invention relates generally to vehicular toys and the like and is more particularly concerned with a power-driven remote-controlled toy vehicle substantially simulating the conventional movements and functions accomplished by normal sized vehicles of a similar character.

A primary object of invention is to provide a power-driven remote-controlled toy vehicle including a chassis incorporating driving and steering wheel assemblies thereon, an electric motor assembly on the chassis, a power transmission assembly engageable with the driving wheel assembly and wherein the motor assembly is reversible to afford forward and reverse movement of the vehicle chassis and movable parts carried thereon, and a remote control assembly including electrical control means operatively connected to the reversible motor assembly and separate mechanical control means operatively connected to both the steering wheel assembly and power transmission assembly for remotely controlling the operation thereof.

A further object of invention in conformance with that set forth is to provide in a power-driven remote-controlled vehicle of the character involved an article handling assembly operatively engageable with lift means carried on the chassis of the vehicle, said lift means being drivingly engageable with the power transmission assembly when the same is disengaged from the driving wheel assembly.

Still further objects of invention in conformance with that set forth reside in the specific structural details of the power transmission assembly and its cooperation with lift means and the driving wheel assembly of the vehicle, the specific article handling assemblies in conjunction with the lift means of the vehicle, and the specific details of the remote control assembly relative to the steering wheel assembly.

And yet another object of invention in conformance with that set forth is to provide a novel power-driven remote-controlled toy vehicle which is readily and economically manufactured, easily used, and amusing, satisfactory and acceptable for the purpose intended.

These together with other objects and advantages which will subsequently become apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the novel vehicle, portions shown in section, this view being substantially on the longitudinal axis of the vehicle, the remote control assembly for the vehicle being shown as an enlarged perspective view;

Figure 2 is an enlarged fragmentary sectional view taken substantially on line 2—2 of Figure 1, showing the interior details of the remote control assembly;

Figure 3 is a horizontal sectional view taken substantially on line 3—3 of Figure 1, showing in phantom lines the manner in which the steering wheel assembly is operated for making a right turn with the vehicle;

Figure 4 is a fragmentary sectional view taken substantially on line 4—4 of Figure 1;

Figure 5 is a fragmentary side elevational view, similar to Figure 1, showing an alternate position of the parts wherein the vehicle when incoporating a dump truck bed will be positioned for dumping material contained in said dump truck bed;

Figures 6*a*, 6*b* and 6*c* are diagrammatic views of the electric control means for the reversible electric motor of the novel vehicle;

Figure 7 is a fragmentary elevational view, portions broken away and shown in section, similar to Figure 1, showing an alternate embodiment of the vehicle wherein the electric motor assembly is utilized solely for the purpose of driving the driving wheel assembly of the vehicle; and

Figure 8 is a fragmentary side elevational view of the novel vehicle, similar to Figure 1, showing an alternate embodiment of the novel vehicle, wherein a vertically pivotal shovel and cab are mounted on the chassis of the vehicle, and showing in phantom lines the manner in which the bucket or shovel assembly is operated for the purpose of lifting material and dumping the same therefrom.

Referring to the drawings in detail, the power-driven remote-controlled vehicle is indicated generally at **10** incorporating a motorized vehicle **12** and a remote control assembly **14**.

The motorized vehicle **12** includes a chassis **16** constructed of any suitable material and including a horizontally disposed bottom portion **18** and side portions **20** and **22**. Extending from opposite sides of the forward end of the chassis are notched out portions **24** and **26**, see Figure 3, and a transversely disposed steering wheel assembly extends therebeneath as indicated generally at **28**. The forwardmost end of the chassis as indicated at **30** terminates at its sides in pivot ear elements **32** and **34** which include transverse aligned apertures therethrough receiving a pivot shaft **36** which pivotally supports a forwardly pivoting cab housing indicated generally at **38**.

The cab **38** has a rear vertical portion **40** terminating at its lower edge in a resilient latch element **42** including a groove portion **44** engageable with one edge of a horizontally disposed plate member **46** suitably secured and extending in horizontal relationship between opposite portions of the sides **20** and **22** of the vehicle chassis.

The bottom **18** of the chassis has a rectangular opening **48** formed therein, said opening having depending from a rear portion thereof a suitably secured rectangular housing indicated generally at **50**. Suitably secured on one side of the bottom **52** of the rectangular housing is a transversely disposed reversible electric motor assembly indicated generally at **54**, said motor assembly being connected by means of suitable electric conductors **56** and **58** to a three position switch assembly indicated generally at **60** the operation of which being shown diagrammatically in Figures 6*a*, 6*b* and 6*c* to subsequently be described in detail. The switch assembly **60** is operatively connected to a suitable source of electric potential indicated generally at **62**, in this case a dry cell battery, and any suitable manner of installation of the same in the cab **38**, for example, might be adapted for operating the vehicle.

The motor assembly **54** includes a laterally extending power output shaft **64** having integrally secured thereon a helical worm or drive gear **66**. Journaled on the shaft **64** and enclosing the drive gear **66** is a pivotal support collar **68** which has extending transversely through aligned aperture portions in opposite sides thereof a suitably journaled driven shaft **70** which overlies the drive shaft **64** of the motor assembly, said driven shaft **70** having

fixedly secured on an intermediate portion thereof within the confines of the collar **68** a driven gear **72**, said gear **72** permitting the driven shaft **70** to rotate or pivot vertically about a horizontal pivot axis defined by the driving shaft **64** of the electric motor assembly, however, when such rotation or pivoting occurs the gear **66** will rotate the driven shaft **70**, said driven shaft **70** constituting a portion of the power transmission assembly of the novel vehicle. The driven shaft **70** has fixedly secured on its forward end portion a driving gear **74** for drivingly engaging lift means indicated generally at **76**. Secured on an intermediate portion on the opposite end of the driven shaft **70** is a helical drive worm or gear **78** for drivingly engaging the rear drive wheel assembly of the vehicle indicated generally at **80**.

The rear drive wheel assembly **80** includes a transversely disposed support shaft or axle **82**, see Figure 4, rotatably received in horizontally disposed aligned support sleeves **84** and **86** fixedly secured on oppositely disposed side portions **88** and **90**, respectively, of the rectangular housing **50**, and fixedly secured on opposite ends of the shaft or axle **82** are suitable wheels **92** and **94**. Extending vertically from opposite sides side portions **88** and **90** of the rectangular housing **50** are aligned transversely apertured support elements **96** and **98**, respectively, which have journaled therethrough opposite ends of an intermediate shaft **100**. Suitably secured in circumposed relationship about an intermediate portion of the axle **82** is a driven gear **102** which interengages a driving pinion **104** fixedly secured on an intermediate portion of the intermediate shaft **100**. Suitably secured in spaced relationship from the pinion gear **104** is a pinion gear **106** which underlies the helical drive gear **78** on the end of the driven shaft **70** and when engaged with the same will cause the intermediate shaft **100** to rotate accordingly causing the axle or support shaft **82** to be rotated thus driving the vehicle. Journaled on the intermediate shaft **100** by means of side flange portions **108** and **110** which are disposed on opposite sides of the gear **106** is a L-shaped lever **112** which incorporates a vertically extending plate portion **114** having an oversized aperture **116** extending therethrough, see Figure 3, through which the rear end portion **118** of the driven shaft **70** extends. Suitably secured to an aperture portion of the flange **110** is one end of a tension spring **120**, the lower end portion of which being fixedly secured through an aperture in the bottom **52** of the rectangular housing **50**, see Figure 4. The tension spring **120** biases the helical drive gear **78** into driving engagement with the pinion gear **106**, inasmuch as the driven shaft **70** may be rotated about the horizontal axis defined by the drive shaft of the electric motor assembly.

Extending longitudinally of the vehicle chassis is an externally threaded elongated feed screw **122** one end portion of which being journaled in a vertically extending apertured support flange portion **124**, the other end portion of which extending through the forward end **126** of the rectangular housing **50**, see Figure 1, for example. The feed screw **122** has fixedly secured on the rear end portion thereof a driven gear **128** which is engageable with the gear **74** secured on the driven shaft **70** previously mentioned. The feed screw **122** has threadedly circumposed thereon a follower element **130** which moves longitudinally of the vehicle chassis when the feed screw **122** is rotated due to engagement of the gear **128** thereof with the driving gear **74**. The follower element **130** incorporates oppositely extending trunnion elements **132**, see Figure 3, which extend through aligned apertures in a bifurcated end portion **134** of a vertically pivotal force transmitting lever **136**. The force transmitting lever **136** incorporates an intermediate longitudinally extending lost motion slot **138** therethrough through which extends a transverse shaft member **140** extending through opposite sides of the vehicle chassis. As seen in Figure 3, suitable spacer sleeves **142** may be fixedly secured on the shaft **140** for retaining the same in its fixed position relative to the vehicle chassis. Suitably secured in the upper end of the force transmitting lever **136** is an elongated leaf spring **144** which is engageable with the bottom portion **146** of a vertically pivotal rearwardly opening dump truck bed indicated generally at **148**. The dump truck bed has secured on the bottom portion **146** thereof adjacent its rear end **150** depending pivot ear elements **152**, only one being shown, which receive therethrough a transverse support shaft **154** which extends through aligned aperture portions in the opposite sides of the vehicle chassis. Circumposed about the support shaft **154** is a hairpin spring **156** one leg portion **158** of which engaging the upper edge of the transverse back plate **160** of the vehicle chassis, the other leg **162** of which engaging the under side of the dump truck bed and accordingly urging said dump truck bed to a horizontally disposed position shown in Figure 1, when the same is positioned in a dumping position shown in Figure 5 by virtue of the rotation of the feed screw **122** when the driving gear **74** rotatably engages the driven gear **128**. Pivotally secured on an apertured support portion **164** on the rear end **160** of the vehicle chassis is a rigid rod element **166** the opposite end portion of which being pivotally secured on an apertured element **168** fixedly secured on the lower edge of the pivotal gate **170** of the dump truck bed which is pivotally connected on suitable pivot elements **172** extending through the sides of the dump truck bed and suitable pivot elements **174** integral with the tail gate. When the dump truck bed **148** is disposed in a horizontal position as shown in Figure 1, the tail gate **170** thereof will be urged to a closed position by the rod **166** and when pivoted rearwardly about the horizontal pivot axis defined by the shaft **154**, the tail gate will be disposed in the open position shown in Figure 5.

Thus without describing the control assembly and the specific control means thereof, the electric motor assembly may be rotated in a clockwise or counter clockwise direction, for the purpose of driving the vehicle forward or backward, i. e. the driving gear **78** is engaged with the pinion gear **106**, and the dump truck bed **148** may be raised or lowered depending upon the direction of rotation of the feed screw **122** when the driving gear **78** is disengaged from the pinion gear **106**, see Figure 5, for example.

The plate element **114** of the L-shaped lever **112** includes at its upper end an apertured ear portion **178** which is connected to a flexible force transmitting element **180** such as braided cable, wire or the like, said flexible force transmitting member **180** when moved in the direction indicated by the direction arrow of Figure 5, causing the aforementioned disengagement between the driving gear **78** and the pinion gear **106**.

The steering wheel assembly **28** comprises a pair of laterally extending support plates **182** and **184** extending from opposite sides of the vehicle chassis and integral therewith, see Figure 3, said plates having suitably secured at their outer ends vertically extending tubular support sleeves **186** and **188**, respectively, which have extending therethrough an intermediate portion of steering arms **190** and **192**, respectively. The lower ends of the steering arms **190** and **192** extend laterally from the sleeves **186** and **188** through which an intermediate portion thereof is journaled providing stub shafts upon which the front wheels **194** and **196**, respectively, are suitably journaled. Upper end portions of the steering arms extend through vertical journal sleeves **198** integral with a transversely extending connecting rod **200** including from an intermediate central portion thereof a stub shaft **202**. The side edge portions of the bottom **18** of the chassis of the vehicle are formed in upwardly extending oppositely disposed channel portions **204** and **206** which slidingly support therein a cam plate **208** incorporating transversely therethrough an angular cam track portion **210** through which the stub shaft **202** is reciprocably received, and

when it is desired to make a right turn with the vehicle, for example, the cam plate 208 is moved forwardly as indicated by the direction arrow in Figure 3, for example, the connecting rod 200 will move to the left or upwardly as seen in Figure 3, wherein the wheels of the steering assembly will be disposed in the position shown by the phantom lines of Figure 3. In order to make a left turn, the cam plate 208 would be moved rearwardly, the connecting rod moved toward the right hand side of the vehicle, or the lower portion of Figure 3, wherein a left turn may be negotiated.

The angular cam track portion 210 communicates with a longitudinally extending slot portion 212, and after the cam plate 208 is moved forwardly or to the right as viewed in Figure 3, the flexible force transmitting cable 180 which is secured at 214 in a suitably apertured portion 216 of the cam plate will be moved forwardly or tensioned, thus rotating the L-shaped lever 112 in a clockwise direction. An intermediate portion of the flexible force transmitting member 180 extends through an upwardly extending apertured guide element 218 suitably secured adjacent the side 22 of the vehicle chassis. Thus movement of the cam plate 208 along the longitudinal axis of the vehicle chassis by virtue of the connection with the force transmitting cable 180 provides the means for pivoting or rotating the driven shaft 70, by virtue of the movement of the L-shaped lever 112 for engaging or disengaging the driving wheel assembly and lift means of the vehicle.

The control assembly 14 provides the means for controlling movement of the cam plate 208 and the direction of rotation of the electric motor assembly 54. The control means 14 includes a rectangular casing member 220 constructed of any suitable material, rectangularly shaped if desired, and including in addition to the switch means 60 previously mentioned, mechanical control means indicated generally at 222. The mechanical control means 222 comprises an elongated handle member 224 having a suitable knob 226 integral with one end portion thereof, said rod extending through the end wall 228 of the housing member and being secured to a relatively stiff wire element 230 which extends through a mounting nut assembly 232 secured in an apertured portion of the other end wall of the housing member, said wire 230 extending through a flexible casing 234, thus defining means for transmitting pressure and tension longitudinally with the flexible wire 230, this means being conventionally identified as a "Bowden" wire assembly. As seen in Figure 1, for example, the lower end portion of the wire 230 is suitably secured at 236 to an apertured rear end portion of the cam plate 208.

The housing member 220 has extending through the side portion 238 thereof an elongated slot portion 240 through which extends a pointer portion 242 of a L-shaped pointer element, the other end portion of which extending within the housing member and being identified at 244, being fixedly secured in laterally extending relationship to an intermediate portion of the rod 224 as seen in Figure 2. Suitable indicia indicated generally at 246 are disposed on the top 248 of the housing member for indicating the relative position of the driven shaft 170 indicative of the condition of operation of the novel vehicle, said indicia being alignable with the upper end portion of the leg 242 of the indicator element.

The switch assembly 60 includes a transversely disposed support shaft 250 journaled in aligned apertures extending through the side wall 238 and side wall 252 of the housing member, said shaft supporting thereon a rotor assembly 253 which includes a central insulating core 254 which have circumposed thereon tubular contacts 256 and 258. Extending transversely through the support shaft 250 externally of the housing member is a transverse handle 260, the other end portion of the support shaft 250 having secured diametrically of the end portion thereof a suitable pointer element 262 alignable with indicia 264 for indicating the direction of rotation of the motor assembly i. e. "rearward" or "forward" or "stop" respectively indicated by "R", "F" and "S". A suitable support member 266 is mounted in the housing member 220 and has extending therefrom suitably secured mutually parallel resilient contact elements indicated generally at 268 the function of which being clearly indicated diagrammatically in Figures 6*a*, 6*b* and 6*c*. Considering these figures, and first considering Figure 6*a*, electrical conductors 270 and 272 from the battery 62 are in engagement with the tubular contacts 256 and 258, respectively, the electrical conductors 256 and 258 to the motor assembly 254 being respectively connected to the tubular conductors 258 and 256 will accordingly drive the rotor of the motor assembly in a clockwise direction. Considering Figure 6*b*, the electrical conductors 256 and 258 are in engagement with the nonconductor portion 254 of the switch and accordingly no current will be delivered to the motor assembly 54. Considering Figure 6, the electrical conductors 56 and 58 are respectively communicating with the contacts 256 and 258 and accordingly counterclockwise rotation of the rotor of the motor assembly 54 is accomplished.

The electrical conductors 56 and 58 together with the flexible force transmitting wire 230 and tubular housing 234 thereof are all enclosed in a suitable flexible sleeve 274 which terminates in a suitable vertically extending support sleeve 276 mounted on plate 46 of the vehicle chassis.

Considering Figure 7, there is shown a fragmentary portion of an alternate embodiment of the novel vehicle, said vehicle being indicated generally at 300 and including a vehicle chassis 302 which incorporates a steering wheel assembly and control assembly identical with that of the previously described embodiment as shown in Figures 1 through 6. In the embodiment of Figure 7, the dump truck bed 304 is fixedly secured on the vehicle chassis. Accordingly, the lift means has been eliminated in this embodiment and the electric motor assembly 54 drives by means of the shaft 64 through the medium of the gear 66 thereon a rearwardly extending driven shaft 306 which has secured thereon a driven gear 308 interengaged with the driving gear 66. The rear end portion of the shaft 306 extends through a suitable aperture portion 310 in the rear end portion 160 of the vehicle chassis. Fixedly secured on an intermediate portion of the driven shaft 306 is a helical drive gear 312 engaged with the pinion gear 106 carried on shaft 100 extending transversely of the vehicle chassis for the purpose of driving the gear 102 on support shaft 82 of the drive wheel assembly of the vehicle which is identical with that previously described.

Considering Figure 8 there is disclosed a still further embodiment of the invention which is substantially the same as that disclosed in Figures 1 through 6, however, secured in rearwardly facing relationship on the vehicle chassis 16 is a cab 400 simulating a rearwardly facing shovel assembly 402. In the embodiment of Figure 8, an angular lever 404 is substituted for the lever 136 of the embodiment of Figures 1 through 6, the lower end portion of which as indicated at 406 being pivotally connected to the trunnion portions of the follower element 130 which is reciprocably disposed on the threaded feed screw 122 previously described. The intermediate portion of the lower leg 408 of the lever 404 incorporates an elongated lost motion slot 410 received on the transverse shaft 140 mentioned relative to the embodiment of Figures 1 through 6. The other leg portion 412 of the lever 404 is pivotally connected at 414 to the lower end of an elongated boom 416 which incorporates an intermediate longitudinally extending slot portion 418 disposed on a support shaft 420 extending from opposite sides of the cab 400. Reciprocable movement of the follower element 130 on the shaft 122 will cause movement of the boom 416 from the solid to dotted line position shown in Figure 8.

The boom 416 has secured at its upper end a suitable longitudinally extending yoke member which is bifurcated and is pivoted at 422 on opposite sides of a dump bucket 424.

Pivotally supported in a suitable bracket on an intermediate portion of the boom 416 is a bell crank lever assembly 426 which incorporates one leg portion 428 having a suitable spring assembly 430 thereabout which is effective to urge an elongated rod member 432 which is pivotally connected at 434 to said leg 428 in the direction indicated by the dotted direction arrow in Figure 8 when the bucket 424 is disposed in the phantom line position shown in Figure 8. The forward end of the rod 432 extends through a suitable support sleeve 436 and the forward end portion thereof indicated at 438 will extend through a transverse aperture portion 440 in the rear wall 442 of the bucket 424. The bell crank assembly 426 includes a right angular leg portion 444 which is engageable with a plate member 446 of the cab 400, as shown by the solid lines of Figure 8, wherein the elongated rod 432 is moved in the direction indicated by the solid arrow of Figure 8, the weight of the material contained in the bucket 424 causing the same to rotate to the dumping position shown therein.

When the boom 416 is lowered to the phantom line position shown in Figure 8, the spring 430 will be effective to urge the end portion 438 of the rod 432 into the aperture 440 of the bucket wherein the same may be raised to the position shown by the solid lines whereafter the material in the bucket 424 will be dumped.

Other than the specific operation of the boom 416 and structure associated therewith, all other cooperating parts of the embodiment of Figure 8 operate as do those described relative to the embodiment of Figures 1 through 6.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A power-driven remote-controlled vehicular toy comprising a chassis including steering and drive wheel assemblies, a reversible electric motor assembly on said chassis, power transmission on said chassis engageable between the drive wheel and reversible electric motor assemblies, a remote control assembly including electrical control means for operating the reversible electric motor assembly and mechanical control means for operating the steering wheel assembly and controlling driving engagement of the power transmission assembly with the motor and drive wheel assemblies, and a vertically pivotal article handling assembly on said chassis, power lift means for elevating the article handling assembly for dumping the contents thereof, the power transmission means being operatively engageable with the power lift means, said lift means including a horizontally disposed externally threaded shaft journaled on the chassis and rotatable upon engagement with the power transmission assembly, an internally threaded follower element circumposed on the threaded shaft and movable thereon in response to rotation of said shaft, a force transmitting lever pivotally connected at one end to the follower element for vertical rotation on a horizontal pivot axis, a fixed horizontal shaft extending transversely in overlying relationship over the threaded shaft, said force transmitting lever including an intermediate longitudinally extending lost motion slot through which the horizontal shaft extends, said article handling means comprising a rearwardly opening dump truck pivotally disposed on a horizontal pivot axis on the rear of the chassis and including means resiliently urging the same toward a horizontally disposed position, and an elongated leaf spring carried by the other end of said lever and engageable with the under face of the truck bed bottom.

2. A power-driven remote-controlled vehicular toy comprising a chassis including steering and drive wheel assemblies, a reversible electric motor assembly on said chassis, power transmission on said chassis engageable between the drive wheel and reversible electric motor assemblies, a remote control assembly including electrical control means for operating the reversible electric motor assembly and mechanical control means for operating the steering wheel assembly and controlling driving engagement of the power transmission assembly with the motor and drive wheel assemblies, and a vertically pivotal article handling assembly on said chassis, power lift means for elevating the article handling assembly for dumping the contents thereof, the power transmission means being operatively engageable with the power lift means, the electric motor assembly including a horizontally disposed power output shaft including an integral helical drive gear on the outer end thereof, a tubular collar journaled on the output shaft surrounding the helical drive gear, a driven shaft journaled through the collar transversely of the output shaft and including an intermediate driven gear within the collar intermeshed with the helical drive gear wherein the driven shaft is pivotal about a horizontal axis defined by the output shaft, driving gears secured on opposite ends of the driven shaft, the driving wheel assembly and lift means including driven gears disposed in the pivotal path of opposite ends of the driven shaft for driving engagement with the driving gears thereof, lever means journaled on a horizontal pivot axis and rotatably receiving one end of the driven shaft through an intermediate portion thereof, tension spring means engaged with the lever biasing the driving gear adjacent the one end of the driven shaft for driving engagement with the driving wheel assembly, and force transmitting means engaged with said lever for pivoting the driven shaft away from the driving wheel assembly and engaging the driving gear at the opposite end of the driven shaft with the driving gear of the lift means.

3. A power-driven remote-controlled vehicular toy comprising a chassis including steering and drive wheel assemblies, a reversible electric motor assembly on said chassis, power transmission on said chassis engageable between the drive wheel and reversible electric motor assemblies, a remote control assembly including electrical control means for operating the reversible electric motor assembly and mechanical control means for operating the steering wheel assembly and controlling driving engagement of the power transmission assembly with the motor and drive wheel assemblies, and a vertically pivotal article handling assembly on said chassis, power lift means for elevating the article handling assembly for dumping the contents thereof, the power transmission means being operatively engageable with the power lift means, said lift means including a horizontally disposed externally threaded shaft journaled on the chassis and rotatable upon engagement with the power transmission assembly, an internally threaded follower element circumposed on the threaded shaft and movable thereon in response to rotation of said shaft, a force transmitting lever pivotally connected at one end to the follower element for vertical rotation on a horizontal pivot axis, a fixed horizontal shaft extending transversely in overlying relationship over the threaded shaft, said force transmitting lever including an intermediate longitudinally extending lost motion slot through which the horizontal shaft extends, said article handling means comprising a rearwardly opening dump truck bed pivotally disposed on a horizontal pivot axis on the rear of the chassis and including means resiliently urging the same toward a horizontally disposed position, and an elongated leaf spring carried by the other end of said lever and engageable with the under face of the truck bed

bottom, said dump truck bed including a rear gate assembly pivotally supported at its upper edge on the dump truck bed, means engaged with the chassis and gate assembly for automatically opening and closing the gate assembly in response to vertical pivotal movement of the dump truck bed.

4. A power-driven remote-controlled vehicular toy comprising a chassis including steering and drive wheel assemblies, a reversible electric motor assembly on said chassis, power transmission on said chassis engageable between the drive wheel and reversible electric motor assemblies, a remote control assembly including electrical control means for operating the reversible electric motor assembly and mechanical control means for operating the steering wheel assembly and controlling driving engagement of the power transmission assembly with the motor and drive wheel assemblies, and a vertically pivotal article handling assembly on said chassis, power lift means for elevating the article handling assembly for dumping the contents thereof, the power transmission means being operatively engageable with the power lift means, said steering wheel assembly including vertically extending steering arms journaled on opposite sides of the chassis, a connecting rod pivotally connected at opposite ends to vertically extending portions of the steering arms, an intermediate stub shaft extending vertically from a central portion of the connecting rod, a longitudinally extending cam plate reciprocably supported on said chassis and including a cam slot portion through which the stub shaft extends, longitudinal reciprocal movement of the cam plate moving the connecting rod transversely of the vehicle chassis for steering the vehicle, force transmitting means extending between the cam plate and power transmission means, the mechanical control means being connected to the cam plate for longitudinally adjusting the same and controlling engagement between the power transmission means and driving wheel assembly or lift means.

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