United States Patent

Harlting et al.

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[45] **Jan. 18, 1972**

[54] DUNE BUGGY TOY

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[21] Appl. No.: **125,998**

[52] **U.S. Cl.** ..... **45/243 LV**, 46/202

[51] **Int. Cl.** **A63h 29/22**

[58] **Field of Search** ..... 46/202, 243 LV

[56] **References Cited**

UNITED STATES PATENTS

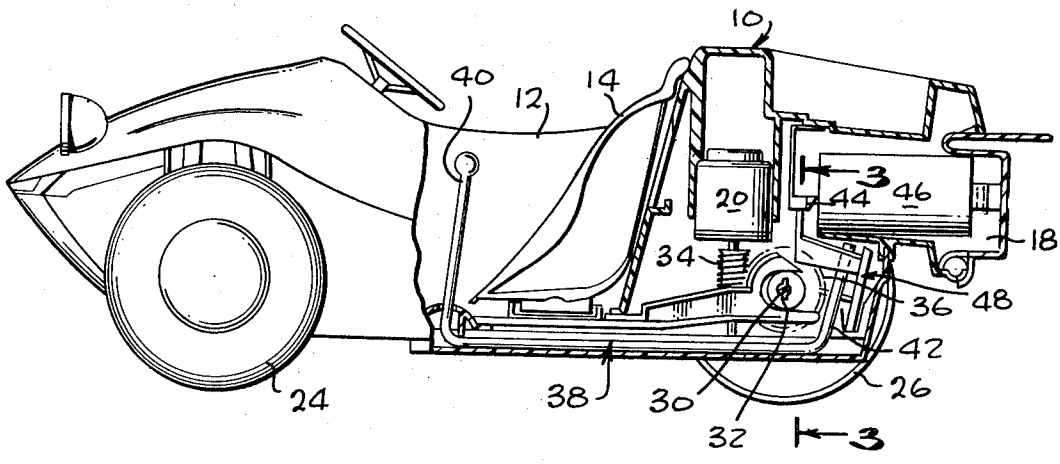
3,169,345	2/1965	Marmo et al.	46/243 LV
3,403,908	10/1968	Sheldon et al.	46/243 LV
3,474,567	10/1969	McRoskey et al.	46/243 LV

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[57] **ABSTRACT**

A toy vehicle resembling a dune buggy and designed to give the appearance of movement over rough terrain when the vehicle is either motor driven or free wheeled along the ground. The vehicle has an open passenger compartment containing a pair of seat that can receive dolls, a mechanism coupled to the rear axle that simultaneously pivots both seats from one side to the other as the vehicle rolls along the ground so that the vehicle appears to be tilting from side to side in the opposite direction. A gearshift lever in the passenger compartment can be operated to slide a switch member. When the switch member is slid to one side, it turns off an electric motor and also slides a worm gear out of engagement with a screw on the motor shaft, so that the vehicle is free wheeling when the motor is turned off.

8 Claims, 8 Drawing Figures

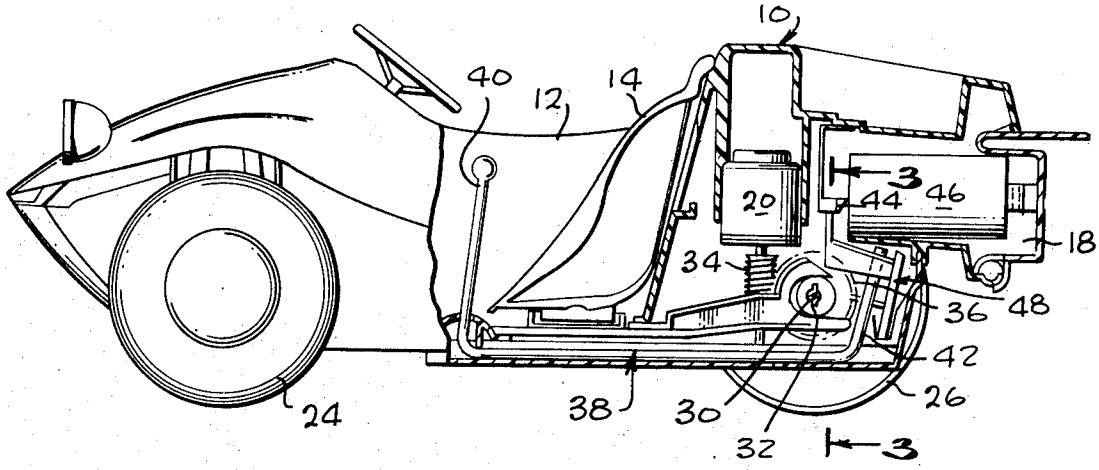


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SHEET 1 OF 3

Fig. 1



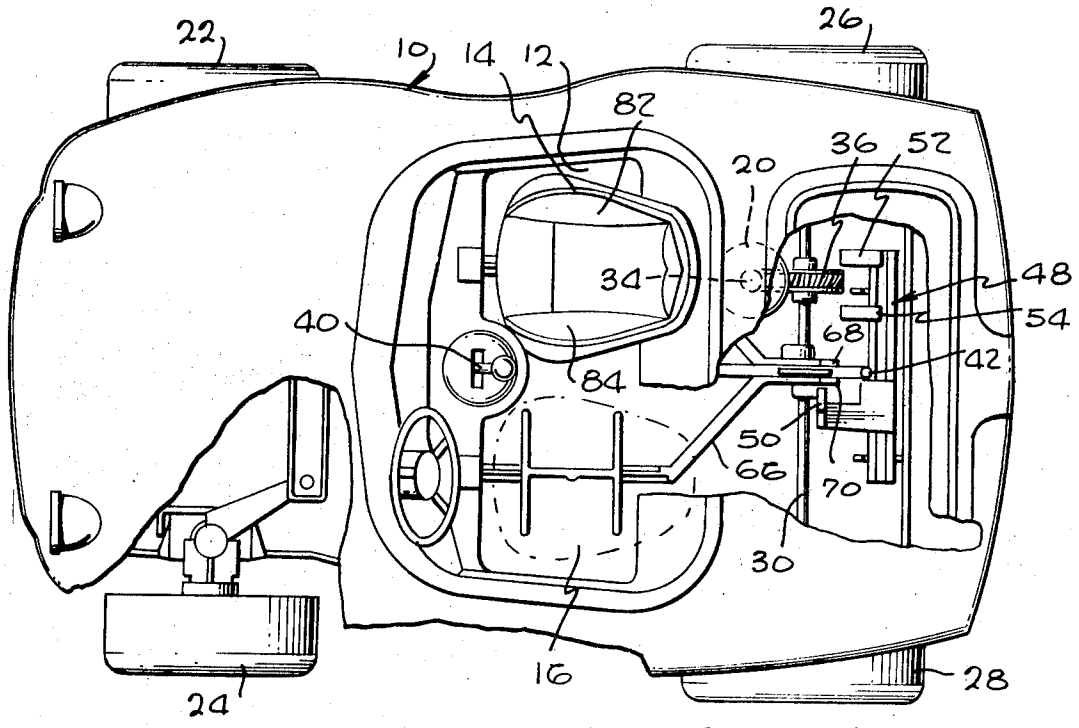


Fig. 2

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Fig. 3

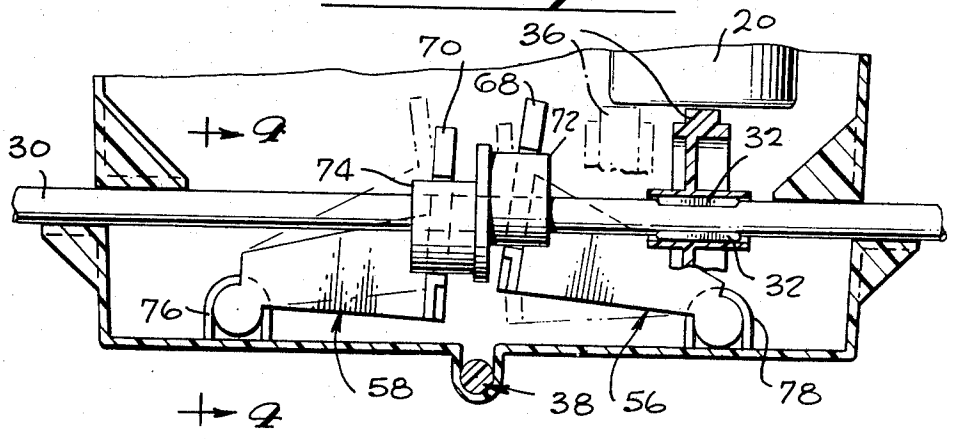
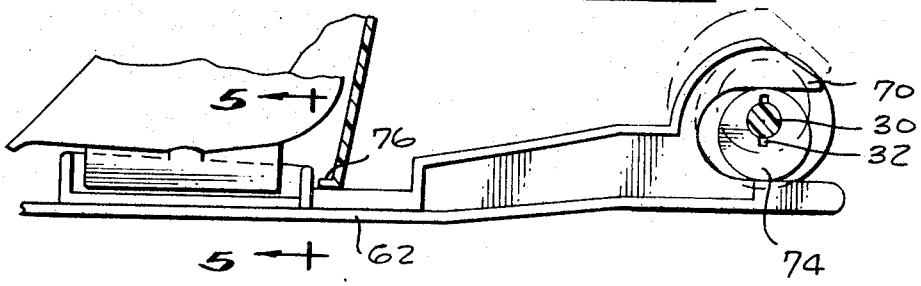


Fig. 4



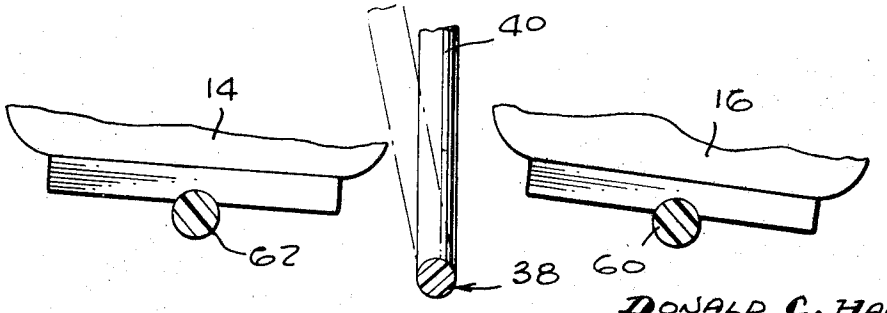


Fig. 5

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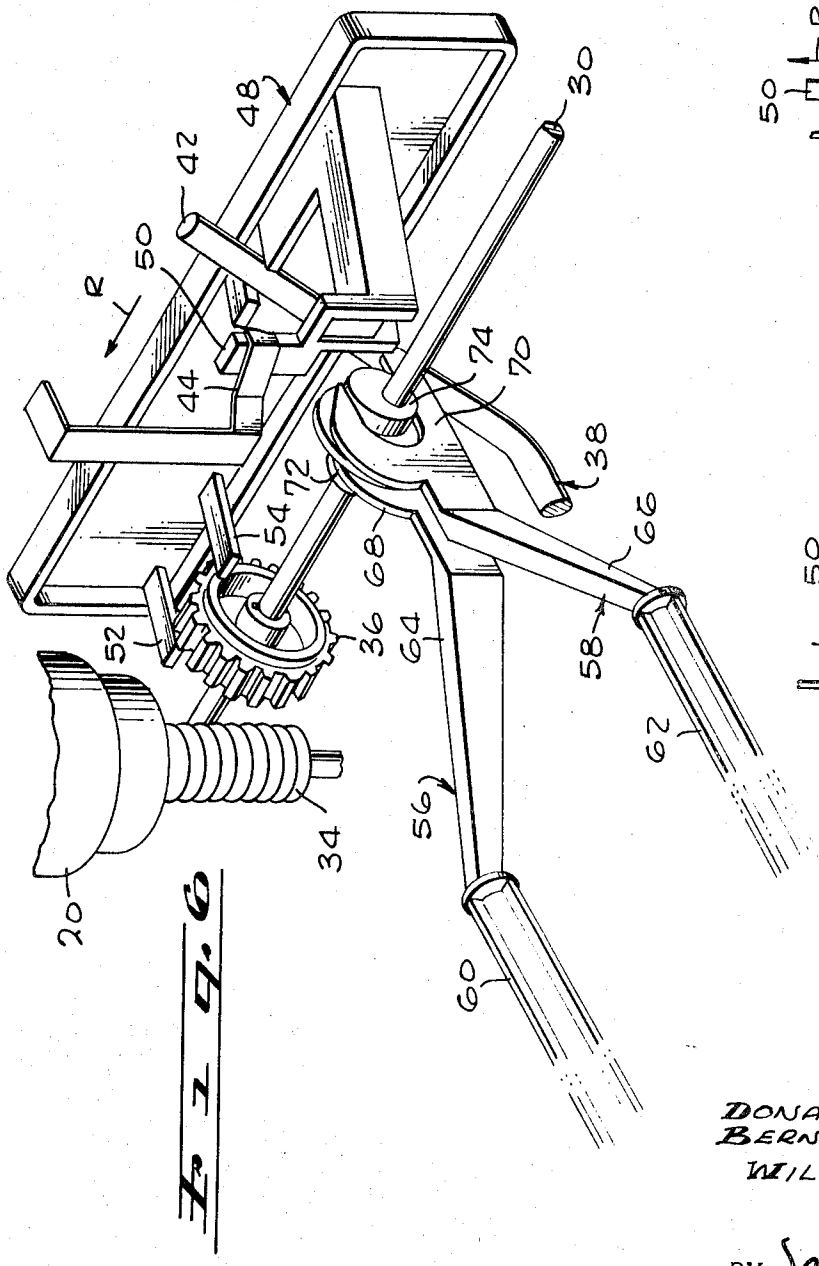


FIG. 6

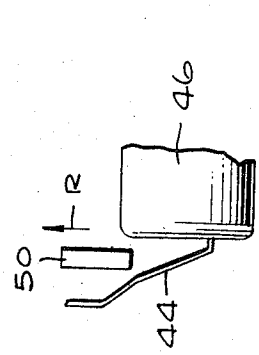


FIG. 7

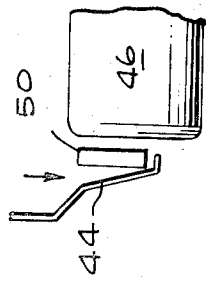


FIG. 8

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DUNE BUGGY TOY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to toy vehicles.

2. Description of the Prior Art

Toy vehicles which produce an interesting animation as they roll along the ground provide interesting toys. While vehicles with a figure that simply bobs up and down have made interesting toys for very young children, a somewhat more complicated and realistic action is desirable for vehicles to be played with by older children. Such vehicles can prove especially entertaining if they can receive a doll representing a fashion model or other young adult, of the type often played with by preteenage girls, and simulate activities which young adults might be expected to engage in. For example, a vehicle representing a dune buggy with seats that can receive fashion dolls and appear to be carrying them over dunes or other rough terrain when rolling on the ground, can serve as an entertaining doll accessory. Such a doll accessory preferably provides animation-simulating travel over rough terrain when either motor driven or pushed (free wheeled). As in the case of most toys designed for mass production, it is necessary to construct such toy vehicles in a simple manner so that they can be sold at low cost.

OBJECT AND SUMMARY OF THE INVENTION

An object of the present invention is to provide a simple toy vehicle which can be selectively motor driven or manually pushed, and which is free wheeling when manually pushed.

Another object is to provide a toy vehicle for receiving dolls, which moves the dolls in a manner closely simulating a ride over rough terrain.

In accordance with one embodiment of the present invention, a toy vehicle is provided which is of simple construction and which can carry and realistically animate dolls. The vehicle includes a splined axle with a worm wheel mounted thereon and an electric motor that drives a worm which can engage the worm wheel to propel the vehicle. A switch member slideably mounted on the vehicle frame can be moved to an off position to open an electrical switch that deenergizes the motor and to simultaneously shift the worm wheel along the axle to disengage the worm and allow the vehicle to free wheel. A pair of cams fixed to the axle move a lever that rocks the seat from side to side when the vehicle rolls on the ground, regardless of whether it is motor driven or free wheeled along the ground.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a partially sectional side view of a dune buggy vehicle constructed in accordance with the invention;

FIG. **2** is a plan view of the vehicle of FIG. **1**;

FIG. **3** is a view taken on the line **3—3** of FIG. **1**;

FIG. **4** is a view taken on the line **4—4** of FIG. **3**;

FIG. **5** is a partial view taken on the line **5—5** of FIG. **4**;

FIG. **6** is a partial perspective view of the driving mechanism of the vehicle of FIG. **1**;

FIG. **7** is a partial view showing the contact portion of the electrical switch apparatus of the mechanism of FIG. **6**, in an electrically closed condition; and

FIG. **8** is a view similar to FIG. **7**, but showing the switch mechanism in an open condition.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. **1** and **2** illustrate a toy vehicle which represents a type of recreation vehicle often referred to as a dune buggy. The vehicle includes a frame **10** with an uncovered or open passenger compartment **12**. A pair of seats **14**, **16**, disposed in the passenger compartment are designed to receive dolls which represent young adults and which are often played with independently of the vehicle, by girls who may dress them in modern fashions. Thus, when one or a pair of dolls are placed in the seats of the dune buggy vehicle, the situation simulates an activity which a young adult might wish to engage in and which children might enjoy thinking about. The toy vehicle has a battery compartment **18** and an electrical motor **20** for enabling self-propulsion of the vehicle along the ground. In addition, the vehicle can be free wheeled, that is, manually pushed along the ground without large restraint. In either case, during movement of the vehicle, the seats **14**, **16** pivot and therefore move the dolls seated thereon to simulate travel of the vehicle over rough terrain.

The toy vehicle frame **10** has four wheels or tires, including a pair of steerable wheels **22**, **24** in front and another pair of wheels **26**, **28** in the rear. One of the rear wheels **26** is fixed to a shaft or axle **30** that can be driven to move the vehicle along the ground. The other rear wheel **28** is free to rotate on the axle **30**, to allow the vehicle to move in a turn. The axle **30** is driven by the motor **20** through a screw or worm **34** fixed to the motor shaft. The worm **34** is engaged with a gear or worm wheel **36** that is mounted on the axle **30** and engaged with a pair of splines **32** thereon. The worm drive provides a simple and low-cost speed reduction, but would normally prevent free wheeling of the rear drive wheel **26**. Even a simple gear drive would hamper free wheeling. To permit free wheeling, the worm wheel **36** is slideably mounted on the axle **30** to enable it to slide therealong out of engagement with the screw **34** when the motor is off.

The on-off switching of the motor is controlled by a lever **38** pivotally mounted on the vehicle frame. The lever has a forward end **40** extending into the passenger compartment and resembling a gearshift lever, and a rearward portion **42**. To make the vehicle drive itself, a child pushes the forward lever portion **40** to the right, to cause the motor to be electrically energized and the worm wheel **36** to move into engagement with the screw **34** of the motor. When a child moves the front lever portion **40** to the left, he not only causes deenergization of the motor, but causes the worm wheel **36** to slide out of engagement with the screw **34**. Energization of the motor occurs when a movable electrical contact **44** moves against the negative terminal of a battery **46** within the battery compartment **18**, while deenergization occurs when the contact **44** is deflected away from the battery terminal. Movement of the contact **44** to control motor energization and movement of the worm wheel **36** are both controlled by a switch member **48**.

Referring to FIG. **6**, the switch member **48** is slideably mounted on the vehicle frame to move laterally thereon. The rear portion **42** of the manually operated lever **38** is engaged with the switch member **48** to slide it from side to side. The switch member **48** has a deflector arm **50** that can move against the electrical contact **44** to deflect it forwardly, out of contact with the battery terminal. The switch member **48** also has a pair of shifter arms **52**, **54** that can engage the face portions of the worm wheel **36** to slide the worm wheel along the axle **30**. When the control lever **38** has been pivoted to the position shown in FIG. **6**, the switch member maintains the contact **44** away from a battery terminal so that the motor is deenergized, and it also maintains the worm wheel **36** out of engagement with the screw **34**.

When the control lever **38** is pivoted to the right to slide the switch member **48** to the right, as indicated by the arrow R, the deflector arm **50** releases the contact **44**. The contact **44** can then move against a battery terminal, as indicated in FIG. **7**. In addition, the shifter arm **54** on the switch member slides the worm wheel **36** along the axle **30** so that it engages the screw **34**. The motor is thus energized to rotate the screw **34** and the screw is engaged with the worm wheel **36** to drive the axle **30** and therefore propel the vehicle. Of course, shifting of the control lever **38** to the left simultaneously causes the contact **44** to disengage the battery terminal, as shown in FIG. **8**,

and shifts the worm wheel **36** out of engagement with the screw, to stop self-propulsion but allow free wheeling.

The doll-receiving seats are pivoted from side to side as the vehicle rolls along the ground, by a pair of seat levers **56, 58** that are pivotally mounted on the vehicle frame. Each lever has a central portion **60, 62** extending parallel to the length of the vehicle, a rearward portion **64, 66** extending with a lateral directional component, and a cam follower portion **68, 70**. The cam follower portions **68, 70** are engaged with cams **72, 74** that rotate with the axle **30** on which the worm wheel and the rear tires of the vehicle are mounted. As shown in FIG. **3**, the cams **72, 74** are arranged so that when one cam follower **68** is up the other **70** is down and vice versa. This causes both seats **14, 16** to rotate to the left or right simultaneously. The seat levers **56, 58** are pivotally mounted on the vehicle frame in a pair of bearing portions **76, 78** formed at the rear of the passenger compartment, as also shown in FIG. **4**.

The toy vehicle can be played with independently of dolls, but is especially entertaining when dolls are seated in the seats **14, 16**. When a pair of dolls are thus seated, and a child pivots the forward lever portion **40** to the right, the motor is energized and the transmission is engaged so the vehicle propels itself along the ground. As the vehicle moves, the dolls appear to roll from side to side. Both dolls roll to the same side together, so it appears that the vehicle is rolling to the opposite side. In order to maintain the dolls in the seats, each seat is provided with sidewalls **82, 84** in addition to a bottom wall and backwall. Although the seats are intended to resemble bucket seats, which have concave backs, the seats have definite sidewalls **82, 84** to hold the dolls in place. A child can play with the vehicle by manually rolling it back and forth on the ground, and it is then free wheeling so that a minimum of resistance is encountered to manual rolling. The seats pivot from side to side as well as moving up and down both when the vehicle is manually rolled and when it is motor driven.

Although particular embodiments of this invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. A toy vehicle comprising:
a toy vehicle frame;
an electrically energizable motor mounted on said frame;
current source means for supplying current to said motor;
a transmission member coupled to said motor to be rotated by it;
an axle rotatably mounted on said frame, said axle having spline means thereon;
a wheel fixed to said axle to rollably support it and to be driven by it;
a gear slideably mounted on said axle and slideably engaged with said spline means thereon;
contact means for closing and opening to energize and deenergize said motor, respectively; and
switch means including a switch member movable to a first position to close said contact means and slide said gear along said axle into engagement with said transmission member, and movable to a second position to open said contact means and slide said gear out of engagement with said transmission member, whereby to permit free wheeling of the vehicle when the motor is not energized.

2. The toy vehicle described in claim **1** wherein:
said current source means includes a battery holder;
said contact means includes a contact electrically coupled to said motor and mounted for deflection towards and away from the terminal of a battery within said battery holder; and
said switch member is engaged with said contact to deflect and release it so it moves away from and against said battery terminal.

3. The toy vehicle described in claim **1** wherein:
said frame defines an open passenger compartment; and including
an on-off lever pivotally mounted on said frame about an axis extending substantially along the length of the vehicle, and having a forward end resembling a gearshift lever and extending into said front passenger compartment and a rear end engaged with said switch member to shift it between said first and second positions.

4. A toy vehicle comprising:
a toy vehicle frame;
an axle rotatably mounted on said frame;
a wheel fixed to said axle;
a motor mounted on said frame;
a screw coupled to said motor to be rotated by it;
a worm wheel slideably mounted on said axle, to slide between a position in engagement with said screw and a position out of engagement with it, said axle and worm wheel having engaging means rotatably coupling them at least when said worm wheel is in said position wherein it engages said screw;
a seat;
means for coupling said seat to said axle to move said seat relative to said frame; and
manually operable means for sliding said worm wheel on said axle, whereby said seat moves when the vehicle rolls on the ground regardless of whether the vehicle is motor driven or free wheeling.

5. The toy vehicle described in claim **4** wherein:
said manually operable means is coupled to said motor to turn it on and off as said worm wheel is respectively slid into and out of engagement with said screw.

6. A toy vehicle comprising:
a toy vehicle frame having forward and rearward end portions;
a motor mounted on said frame and having a transmission member coupled to its motor shaft;
an axle rotatably mounted on said rearward end portion of said frame, said axle having spline means thereon;
a wheel fixed to said axle;
a gear mounted on said axle and slideably engaged with said spline means;
a switching member slideably mounted on said rearward end portion of said frame to slide substantially laterally thereon between first and second positions, said switching member having a pair of arm portions at opposite faces of said gear, to slide said gear between a first position wherein it is engaged with said transmission member and a second position wherein it is disengaged from it, when said switching member is respectively slid between its first and second positions; and
means coupling said switching member to said motor to turn it on and off when said switching member is slid to its first and second positions, respectively.

7. A toy vehicle comprising:
a toy vehicle frame with an open passenger compartment, and with forward and rearward ends;
a shaft rotatably mounted on said frame about a laterally extending axis;
at least one wheel coupled to said shaft;
a cam member on said shaft;
a seat member within said passenger compartment; and
a seat lever mounted on said frame to pivot at least about a longitudinal axis which extends along the length of said frame, said seat lever having a forward end portion supporting said seat member and a rearward end portion forming a cam follower and engaged with said cam to be moved substantially up and down by it, said rearward end portion extending with a lateral directional component from said longitudinal axis so that up and down movement of said cam follower causes pivoting of said seat member about said longitudinal axis;
said seat member including a bottom part for supporting the weight of a doll, a back for holding the doll in an upright seated position, and a pair of sidewalls for restraining the doll from sliding sidewardly off the seat.

8. A toy vehicle comprising:
a toy vehicle frame with forward and rearward end portions;

an axle rotatably mounted on said frame;
a wheel fixed to said axle;
a pair of cams fixed to said axle;
a pair of seats for holding a pair of dolls; and
a pair of seat levers pivotally mounted on said frame, each having one end engaged with one of said cams and another end coupled to one of said seats so that said seats

rock as said frame rolls on the ground;
said cams positioned on said axle to rock both of said seats simultaneously to either side, whereby the vehicle frame appears to be swaying from side to side opposite to the swaying of the dolls.

* * * * *