Sept. 13, 1966 C. H. VAUGHAN 3,271,899

STEERING ARRANGEMENT FOR TOY VEHICLES

Filed June 1, 1964

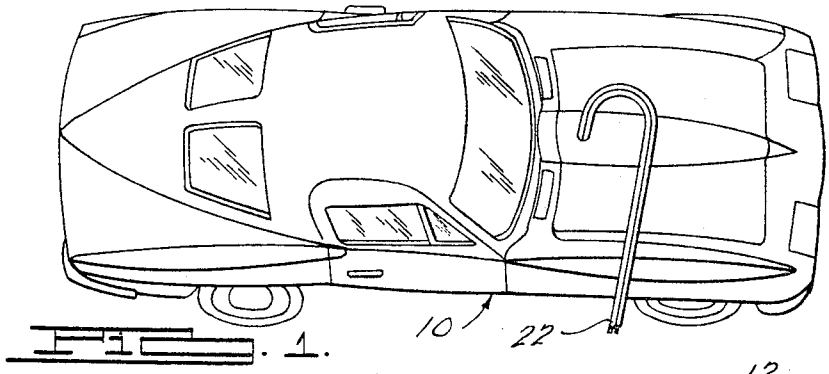


FIG. 1.

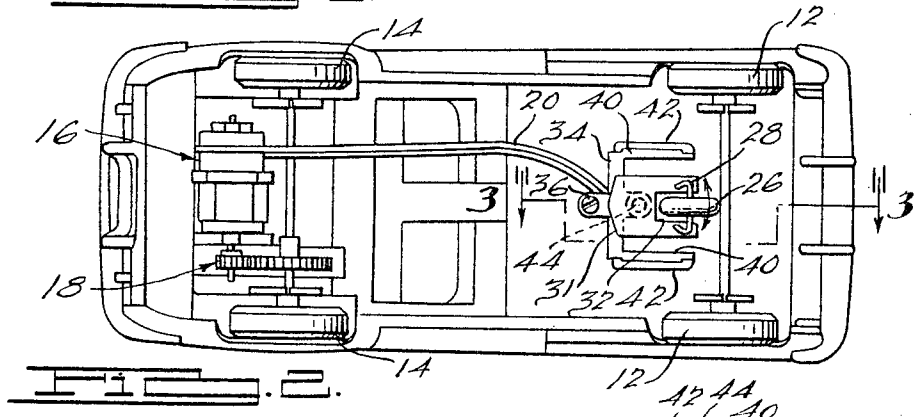


FIG. 2.

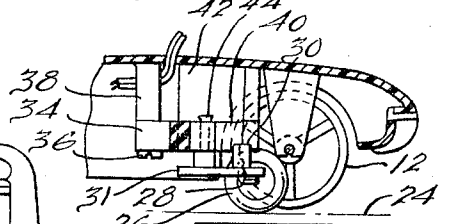


FIG. 3.

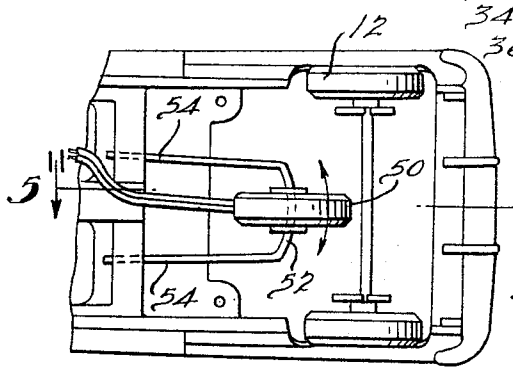


FIG. 4.

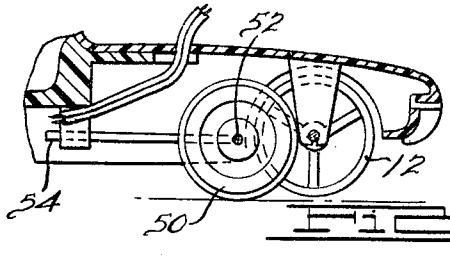


FIG. 5.

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STEERING ARRANGEMENT FOR TOY VEHICLES

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This invention relates to a toy vehicle and has particular reference to a new and improved steering arrangement for a toy automobile, or the like. In general, the invention comprises a ground engaging steering wheel for a toy vehicle, which is mounted on the vehicle in such a manner as to enable the operator of the toy to control steering thereof by proper manipulation of a control cord secured to the toy. The invention is particularly suitable for use in a motor-driven wheeled toy, although it is not limited thereto.

According to the present invention, a wheeled toy, such as a toy automobile, is provided with at least a pair of ground engaging wheels, one of which may be driven either by a spring motor, or a battery operated electric motor. The steering wheel is mounted on the underside of the vehicle body in such a manner that it is free to swivel or swing from side to side along an arcuate path, the center of curvature of which is disposed between the steering wheel and the driven wheels. A control cord extends from the vehicle and may be gripped by the operator in order to exert a lateral pull on the vehicle body thereby effecting relative movement between the body and the steering wheel so that the toy will turn in the direction opposite the direction of pull on the control cord. The control cord is not connected to the steering wheel directly, since the latter is freely movable relative to the vehicle body within predetermined limits and the control cord is therefore utilized merely to shift the body laterally relative to the steering wheel to change the direction in which the toy is moving. When a battery-operated electric motor is employed as the source of power, the control cord may consist of the electric wire which is conventionally employed for enabling the operator to control operation of the toy.

A principle object of the invention is to provide a new and improved steering arrangement for a toy vehicle.

A further object of the invention is to provide a steering arrangement for toy vehicles in which a ground engaging steering wheel is mounted on the vehicle body in such a manner as to enable the vehicle to be steered by exerting a pull on the vehicle body through the use of a remote control cord.

Other and further objects of the invention will be apparent from the following description and claims and may be understood by reference to the accompanying drawing, of which there is one sheet, which by way of illustration show preferred embodiments of the invention and what I now consider to be the best mode of applying the principles thereof. Other embodiments of the invention may be used without departing from the scope of the present invention as set forth in the appended claims.

In the drawing:

FIG. 1 is a perspective view of a toy vehicle embodying the present invention.

FIG. 2 is a plan view of the underside of the vehicle shown in FIG. 1.

FIG. 3 is a sectional view taken on line 3—3 of FIG. 2.

FIG. 4 is a fragmentary bottom plan view of another form of the invention.

FIG. 5 is a sectional view taken on line 5—5 of FIG. 4.

Referring to FIGS. 1, 2 and 3, a toy vehicle comprises a plastic body **10** mounted on front and rear wheels **12** and **14** and includes an electric motor **16** for driving the rear wheels **14** through a gear train **18**. The motor **16** may be battery powered and a flexible electric wire **20** leads from the motor **16** through an opening in the hood of the vehicle. The portion **22** of the wire **20** may be several feet in length and leads to a control box (not shown) of conventional construction which includes batteries and a hand-operated switch so that the vehicle may be operated from a distance by a person holding the control box.

As will be noted in FIG. 3, the front wheels **12** are spaced a very slight distance above the ground, or supporting surface **24**, and a ground engaging front steering wheel **26** supports the front end of the toy. The steering wheel **26** is rotatable on a wire axle **28**, the opposite ends of which are turned upwardly and secured within bosses **30** formed on a steering member **31**. The member **31** is provided with a cutout portion **32** to accommodate the steering wheel **26**.

A supporting bracket **34** is secured by a screw **36** to a post **38** which extends downwardly from the underside of the hood of the vehicle. The mounting bracket **34** is provided with arms **40** which engage and slidably fit against a pair of supports **42** which may be formed integrally with the vehicle body and extend downwardly from the underside of the hood of the body.

The steering member **31** is pivotally mounted on the bracket **34** by means of a pin **44** which extends upwardly from the member **31** through a hole in the bracket **34** and has its outer end wedged or staked to retain the steering assembly in place.

The steering member **31** and the wheel **26** carried thereby are free to pivot on the pin **44** toward either side of the vehicle. Such movement of the steering mechanism is limited by engagement of one of the bosses **30** with the adjacent one of the arms **40** of the supporting bracket **34**. The steering wheel is thus mounted for movement along an arcuate path, the center of curvature of which is the pin **44**, which is disposed rearwardly of the steering wheel.

In operation of the toy, the operator energizes the motor **16** through proper manipulation of the control box at the outer end of the elongated control wire **22**. Assuming the vehicle to be driven in a straight path at a distance from the operator, a slight pull on the control wire **22** will effect movement of the vehicle body over the steering wheel **26** so that the latter is pivoted toward the side of the vehicle opposite that from which the pull is exerted, thereby causing the vehicle to turn away from the operator. The vehicle will continue turning until a further control force is applied to the vehicle through the control wire **22**. The vehicle thus may be made to travel in a circular path, or may be made to travel in a figure 8 path, or may be manipulated in any desired manner by exerting a pull on the control cord at the proper time. While a pull on the control cord as described will swing the steering wheel to the opposite side of the body of the vehicle, it is apparent that a continued light pull or tension on the cord may be used to keep the top traveling in a straight line, or even to turn the toy toward the operator by skidding the wheel over the ground, thereby making possible travel of the toy in any desired path.

In the embodiment of the invention shown in FIG. 4, the steering wheel **50** is slidably and rotatably mounted on a curved axle **52**, which may be made of wire and provided with end portions **54** suitably secured to a part of the vehicle as previously described and operation thereof is also as described above. When a lateral pull is exerted on the control cord, the steering wheel **50** will slide to one end or the other of the curved axle **52** thereby to effect turning of the toy away from the direction from which the pull was exerted. The center of curvature of

the axle 52 is disposed rearwardly of the steering wheel 50 and thus the steering wheel functions similarly to the pivoted wheel previously described.

While the toy vehicles shown herein are preferably provided with front wheels which are held off the supporting surface by the steering wheel, the front wheels are not necessary, but improve the appearance and add stability to the toy when it is transversing a curved path. It will be apparent that a spring motor could be used, rather than an electric motor, as the power source and that the steering arrangement might also be used in any type of wheeled toy.

While I have illustrated and described preferred embodiments of my invention, it is understood that this is capable of modification, and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A toy vehicle having a pair of rear wheels, motor means for driving at least one of said wheels, a ground engaging front steering wheel mounted on said vehicle for limited movement from side to side of the vehicle along an arcuate path the center of curvature of which is vertical and disposed rearwardly of said steering wheel, and a control cord secured to said vehicle independently of said steering wheel by means of which an operator may exert a laterally directed pull on the vehicle to move the vehicle laterally over said steering wheel to position the latter at the side of the vehicle opposite the side from which the pull on the cord is exerted thereby to effect turning of the vehicle away from the operator.

2. A toy vehicle having a pair or rear wheels, motor means for driving at least one of said wheels, a ground engaging front steering wheel swivelly mounted on said vehicle for movement from side to side of the vehicle along an arcuate path the center of curvature of which is disposed rearwardly of said steering wheel, and a control cord secured to said vehicle independently of said steering wheel by means of which an operator may exert a pull on the vehicle to move the vehicle laterally over said steering wheel to position the latter at the side of the vehicle opposite the side from which the pull on the cord is exerted thereby to effect turning of the vehicle away from the operator.

3. A toy vehicle having a pair of rear wheels, a ground engaging front steering wheel mounted on said vehicle for movement from side to side of the vehicle along an arcuate path the center of curvature of which is vertical and disposed rearwardly of said steering wheel, and a control cord secured to said vehicle independently of said steering wheel by means of which an operator may exert a pull on the vehicle to move the vehicle laterally over said steering wheel to position the latter at the side of the vehicle opposite the side from which the pull on the cord is exerted thereby to effect turning of the vehicle away from the operator.

4. A toy vehicle having a pair of ground engaging wheels at one end thereof, motor means for driving at least one of said wheels, a ground engaging steering wheel supporting the other end of said vehicle, means mounting said steering wheel for movement from side to side of the vehicle along an arcuate path the center of curvature of which is vertical and longitudinally spaced from the steering wheel toward said pair of wheels, and a control cord secured to said vehicle independently of said steering wheel by means of which an operator may exert a pull on the vehicle to move the vehicle laterally over said steering wheel to position the latter at the side of the vehicle opposite the side from which the pull on the cord is exerted thereby to effect turning of the vehicle away from the operator.

5. A toy vehicle according to claim 4 wherein said mounting means comprises a steering member pivotally mounted on said vehicle and rotatably supporting said steering wheel.

6. A toy vehicle according to claim 5 including stops on said vehicle engageable with said steering member to limit pivotal movement thereof.

7. A toy vehicle according to claim 4 wherein said mounting means comprises a curved axle on which said steering wheel is rotatably and slidably mounted.

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