Aug. 24, 1965 E. R. STEWART 3,202,109

MINIATURE RACING CAR

Filed Aug. 18, 1964 2 Sheets-Sheet 1

Fig. 1

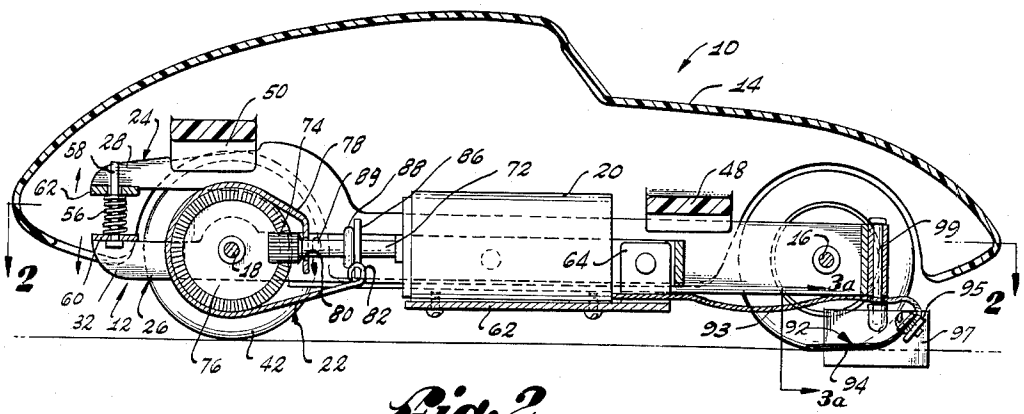
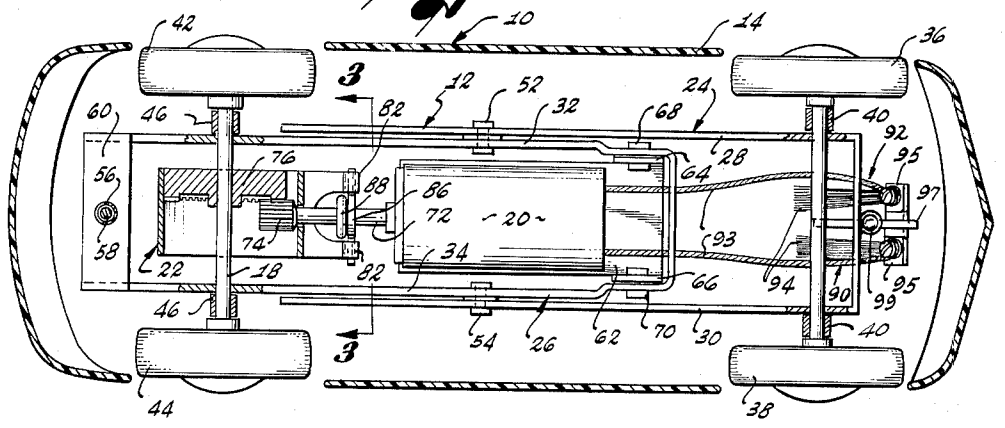


Fig. 2



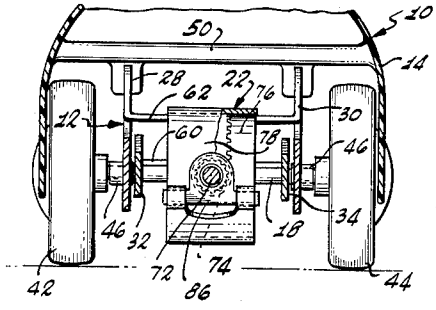


Fig. 3

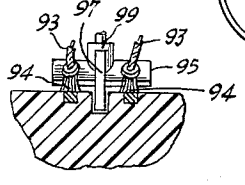
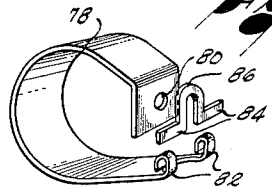


Fig. 3a

Fig. 4



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MINIATURE RACING CAR

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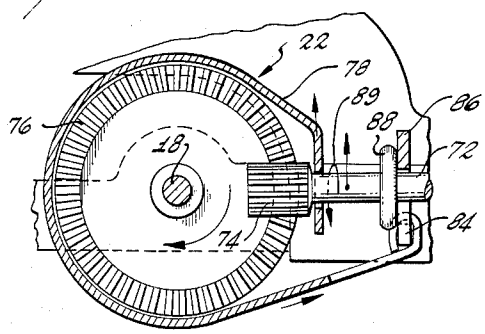
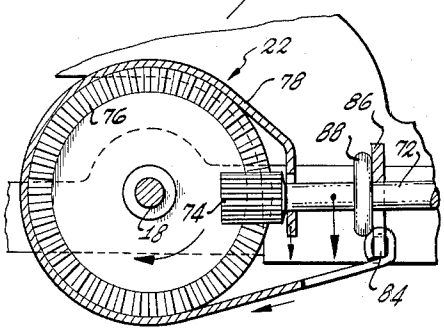
Fig. 5



BRAKE OFF CONDITION
MOTOR RUNNING

Fig. 6



BRAKE ON CONDITION
MOTOR OFF

Fig. 9

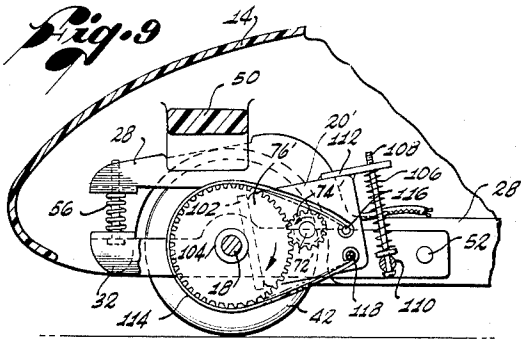
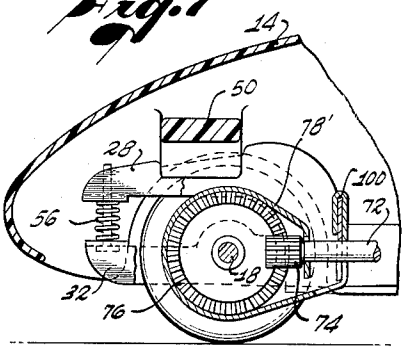


Fig. 7



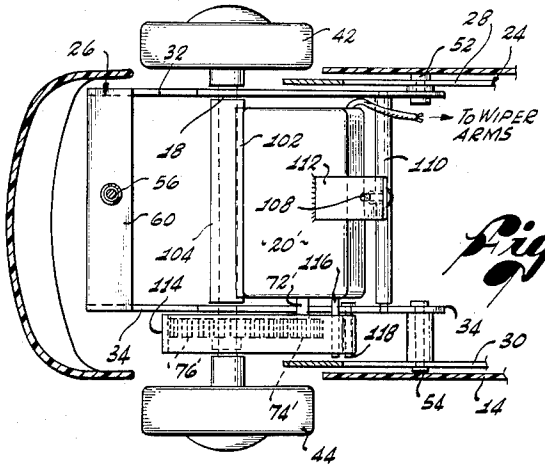
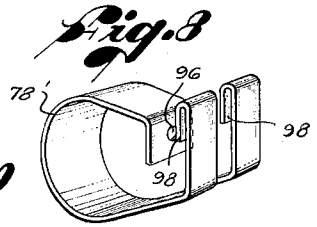


Fig. 10

Fig. 8



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United States Patent Office 3,202,109 Patented Aug. 24, 1965

3,202,109

MINIATURE RACING CAR

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Filed Aug. 18, 1964, Ser. No. 390,321
19 Claims. (Cl. 104—60)

My invention relates to toy cars and the like, and more particularly to an improved miniature car of the "slot" racer type.

In recent years, electric motor-driven miniature racing cars, and particularly those adapted for running over tracks of various forms, have become increasingly popular toys. Generally, such cars are of the "slot" racer type including a guide pin riding in a slot to guide the car and electrical pick up arms sliding along electrical conductors for supplying current to the car's motor. The magnitude of the voltage applied to the car's motor controls the motor's speed of operation and hence the rate at which the car travels along the slot in the track. Thus, by regulating the voltage applied to the conductors, the car may be started, speeded up, slowed and stopped.

Unfortunately, in presently available slot racing cars, regulation of the applied voltage is the only means of controlling the car's rate of travel. This does not allow for accurate or rapid stopping or slowing of the car since even after the voltage supply is terminated the car continues to move due to its own momentum. In practice, this makes it extremely difficult to control present slot racing cars, particularly during turning, the common result being that during racing the cars often leave the tracks at the turns. This inevitably means the end of the race for the particular racer involved, materially detracts from the enjoyment of the game, and is very hard on the racing cars, sometimes resulting in permanent damage thereto.

The difficulty in controlling the slot racing cars, particularly during turning, is generally increased by the rather crude chassis design prevalent in present slot racers. During turning, as well as when traversing even a slight hill, the wheels of the present slot racers tend to leave the track, sometimes resulting in derailment of the associated car.

In view of the foregoing, it is a general object of my invention to provide an improved miniature racing car which overcomes the above problems.

It is another object of my invention to provide an improved miniature racing car which may be accurately started, speeded up, slowed and stopped at the will of its operator.

A further object of my invention is to provide an improved motor-driven miniature racing car having a novel brake construction which is automatically operable with operation of the motor of the car.

Still another object of my invention is to provide an improved chassis construction for miniature racing cars.

A still further object of my invention is to provide an improved miniature racing car which is inexpensive, simple in design, and easy to manufacture and maintain.

The foregoing as well as other objects and advantages of my invention may be more clearly understood by reference to the following detailed description taken in connection with the accompanying drawings which set forth by way of illustration and example certain embodiments of my invention.

In the drawings:

FIGURE 1 is a sectional, side view illustrating the inner construction of the chassis, drive and brake assemblies of one form of miniature racing car of my invention;

FIGURE 2 is a sectional, top view taken along the line 2—2 of FIGURE 1;

FIGURE 3 is a fragmentary, sectional front view taken

along the lines 3—3 in FIGURE 2 illustrating the mounting for the motor and brake assemblies to the frame construction for my miniature racing car;

FIGURE 3*a* is a fragmentary, sectional view taken along the lines 3*a*—3*a* in FIGURE 1 illustrating the construction of the track over which racing car rides;

FIGURE 4 is a perspective view of the brake band and associated bifurcated support plate of the brake assembly of the miniature racing car illustrated in FIGURES 1 through 3;

FIGURE 5 is a schematic representation of the brake apparatus illustrated in FIGURE 1 with the brake disengaged to allow free running of the racing car;

FIGURE 6 is a schematic representation of the brake assembly of FIGURE 1 with the brake on to prevent forward movement of the racing car;

FIGURE 7 is a fragmentary sectional side view of the brake apparatus and rear end section of my miniature racing car employing a modified form of brake band;

FIGURE 8 is a perspective view of the modified form of brake band illustrated in FIGURE 7;

FIGURE 9 is a fragmentary sectional side view of a modified brake apparatus and motor drive mounting assembly for my miniature racing car; and

FIGURE 10 is a fragmentary sectional top view of the modified brake apparatus and motor mount illustrated in FIGURE 9.

In FIGURES 1, 2 and 3, my miniature racing car is represented generally by the numeral 10 and comprises a frame 12 and a car body 14, front and rear wheel supporting axles 16 and 18, an electric motor 20 and a brake assembly 22 all supported by the frame.

To provide such support, the frame 12 comprises front and rear axle supporting frames 24 and 26 having generally parallel side arms 28, 30 and 32, 34, respectively. The front axle 16 passes through holes in the side arms 28 and 30 with front wheels 36 and 38 stationed at the ends of the axle and separated from the side arms by spacers 40. The rear axle 18 passes through holes in the side arms 32, 34 with rear wheels 42 and 44 fixed to the ends of the axle and separated from the side arms by spacers 46.

The side arms 28 and 30 lie outside the side arms 32 and 34 and extend from just forward of the front axle 16 along the sides of the car, curving upward over the rear axle 18 to the rear of the car. Car body cross pieces 48 and 50 are fixed to the side arms 28 and 30 adjacent the front and rear axles to provide support for the car body over the frame 12. (See FIGURES 1 and 3.)

The side arms 32 and 34, on the other hand, extend within and along the side arms 28 and 30 from the rear of the car forward to a position just behind the front wheels 36 and 38 and are pivotally coupled to the side arms 28 and 30 substantially midway between the front and rear axles by pins 52 and 54, respectively. The rear frame 26 is also resiliently coupled to the front frame 24. This is accomplished by a compression spring 56 extending around a vertical pin 58 fixed at its lower end to a cross piece 60 between the rear ends of the arms 32 and 34 and passing at its upper end through a hole in a cross piece 62 fixed between the rear ends of the arms 28 and 30. The spring presses upwardly on the cross arm 62 and downwardly on the cross arm 60 to continuously urge the rear ends of the front and rear frames 24 and 26 apart. The pivotal and resilient coupling of the front and rear frames thus affords spring-biased scissor-like movement between the front and rear frames relative to the pins 50 and 52, allowing the front and rear wheels to move up and down independent of each other, and tends to maintain the front and rear wheels in contact with the track over which my racing car moves,

thereby allowing my car to rapidly travel over hills and valleys without its wheels leaving the track and materially improving my car's road-hugging capabilities around turns.

In the form of my racing car illustrated in FIGURES 1 through 3, the electric motor **20** is pivotally coupled to the forward end of the rear frame **26** for limited vertical rocking movement relative to the rear axle **18**. Such support for the motor **20** is provided by a flat support plate **62** fixed to the lower side of the motor **20**. The support plate **62** is pivotally coupled to the front portions of the side arms **32** and **34** by pins **68** and **70** passing through aligned holes in the side arms and a pair of flanges **64** and **66** extending upward from the sides of the support plate.

The drive shaft of the motor **20** is represented by the numeral **72** and extends rearward from the motor in a generally horizontal plane toward the rear axle **18**. Fixed to the end of the drive shaft **72** is a pinion gear **74** which meshes with a ring gear **76** carried by the rear axle **18**.

Surrounding the ring gear **76** is a brake band **78** best seen in FIGURE 4. The brake band **78** is generally of spiral shape with the end radially closest the center of the spiral, i.e. its inner end, provided with a hole **80** through which the drive shaft **72** projects. The end furthest from the center of the spiral, i.e., outer end of the band, is split and bent over to provide clips **82** for looping around and fixing the outer end of the band to a pair of cross arms **84** extending laterally from a bifurcated support plate **86** supported by the drive shaft. The position of the support plate along the drive shaft is fixed by a collar **88**. The outer end of the brake band is thus solidly anchored to the drive shaft while the inner end of the band is carried by the drive shaft just forward of the pinion gear **74**.

When the motor **20** is not operating, the weight of the motor moves the drive shaft **72** and the pinion gear **74** downwardly along the ring gear **76**. This carries the inner end of the brake band **78** downward and wraps the band tightly around the ring gear. The brake band **78** thus provides end support for the drive shaft and, when tightly wrapped around the ring gear, prevents rotation of the rear axle **18**. This condition is most clearly illustrated in FIGURE 6.

When the motor **20** is energized to rotate the drive shaft **72** in the direction indicated by the arrow **89**, the pinion gear **78** initially rotates over the teeth of the stationary ring gear **76**. Since the motor **20** is pivotally coupled at its forward end, the initial rotation of the pinion gear **74** allows the pinion gear to effectively climb up the ring gear. This loosens the brake band **78** around the ring gear and permits the pinion gear to drive the ring gear and hence the rear axle **18** and rear wheels in a forward direction. Continued rotation of the pinion gear **74** with the drive shaft **72** continues to tend to raise the pinion gear with respect to the rear axle **18**, this being the normal reaction accompanying the force tending to move the forward side of the ring gear down. The "off" condition of the brake assembly **22** with the motor running is most clearly illustrated in FIGURE 5.

As in conventional miniature racing cars, the electric motor **20** is of the direct current type having a rotational speed which varies with the magnitude of the voltage applied to the motor. In this regard, current is supplied to and returned from the motor by electrical pick ups **90** and **92**, each including a wire **93** connected to the motor **20** and bristles **94** for riding along electrical conductors imbedded in the track over which the racer travels (see FIGURE 3*a*). In the illustrated form of my racer the wires terminate at side brackets **95** extending from a vertical guide blade **97** for guiding my car. The guide blade **97** is adapted to pivot with a pin **99** pivotally connected to the front of the frame **24** to follow a slot in the track. The bristles **94** are electrically connected to the ends of the wires **93** and extend under the brackets **95** rearwardly to ride along the electrical conductors imbedded in the track.

Once the motor **20** is running and the brake assembly **22** is disengaged, the value of the voltage applied to the electric motor by the wiper arms **90** and **92** regulates the rotational velocity of the drive shaft **72** and hence the forward velocity of my racing car. When it is desired to increase the speed of the car, the voltage supplied to the motor **20** is increased. When it is desired to slow the car, the voltage is decreased accordingly. As the voltage supplied to the motor **20** is decreased and the rotational velocity of the drive shaft is reduced, the climb of the pinion gear **74** over the ring gear **76** relative to the rear axle **18** reduces. As the pinion gear **74** moves slightly downwardly relative to the rear axle **18**, the brake band **78** moves inwardly around the outer surface of the ring gear **76** to increase the frictional drag of the brake band on the ring gear. This immediately produces an accurately controlled slowing of my racing car to allow the car to come to a controlled halt or take a turn at a controlled and safe speed. If further slowing of my racing car is desired, the voltage supplied to the motor **20** is further reduced, with a corresponding downward movement of the pinion gear **74** and tightening of the brake band **78** about the ring gear **76**. If it is desired to rapidly stop my racing car, the voltage supply is simply terminated. This halts rotation of the pinion gear, effects a rapid, downward movement of the pinion gear relative to the rear axle **18** with a turning of the ring gear **76**, produces an immediate tightening of the brake band **78** around the ring gear and a sudden skidding halt of the car.

FIGURE 7 illustrates a modified form of brake band **78'** providing for accurate speed control of my racing car with operation of the motor **20**. As best seen in FIGURE 8, the brake band is generally of spiral shape with the inner end provided with a hole **96** through which the drive shaft projects. The outer end of the band is turned upwardly and then split to permit the drive shaft to pass between the two upwardly projecting portions. The upper ends of these portions are bent over to provide clips **98** which engage the upper surface of a cross piece **100** extending between the side arms **28** and **30** of the front frame **24**.

Somewhat modified forms of the motor drive and brake assemblies for my racing car are illustrated in FIGURES 9 and 10. As represented, the electric motor **20'** is fixed to a support plate **102** secured, in turn, to a sleeve **104** around the rear axle **18**. The motor **20'** is thus laterally supported between the side arms **32** and **34** of the rear frame **26** for rotation about the rear axle **18**. The rotation of the motor **20'** about the rear axle **18** is limited by a light compression spring **106** disposed around a generally vertically extending screw **108**. The lower end of the screw **108** passes through a cross piece **110** between the side arms **30** and **34** of the rear frame **26** while the upper threaded end screws into and through a plate **112** secured to and extending from the top of the motor **20'**. Turning of the screw **108** controls the extension of the screw through the plate **112** and hence the compression of the spring **106** urging the motor upward about the rear axle **18**.

In this position, the drive shaft **72'** of the motor **20'** extends horizontally toward the side arm **30** of the front frame **24** and is provided with a pinion gear **74'** which continuously meshes with a spur gear **76'** carried by the rear axle **18**.

Surrounding the spur gear **76'** is a brake band **114**. The upper end of the brake band is fixed by a pin **116** to the side of the motor **20'** while the lower end of the brake band is fixed by a pin **118** to the side arm **34** of the rear frame **26**.

When the motor **20'** is not operating, the weight of the motor **20'** moves the drive shaft **72'** and the pinion gear **74'** downwardly. This, in turn, carries the upper end

of the brake band 78' downwardly to wrap the brake band tightly around the spur gear 76' thereby preventing any rotation of the rear axle 18 and the rear wheels 42 and 44.

When the motor 20' is energized it rotates the drive shaft 72' and pinion gear 74' in the directions indicated by the arrows in FIGURE 9. This causes the pinion gear to initially climb upwardly over the teeth of the spur gear 76' thereby loosening the brake band 114 from the spur gear and permitting free driving rotation of the spur gear to drive my racing car forward. The accurate speed control of my racing car both in speeding up, slowing down and stopping is as previously described with the voltage supplied to the motor 20' determining the rotational velocity of the pinion gear 74', the pinion gear's upward and downward movements relative to the rear axle and hence the tightening and loosening of the brake band 114 around the spur gear 76'.

In view of the foregoing, it will be appreciated that my invention provides an improved miniature racing car which is capable of being started, speeded up, slowed and stopped with good accuracy and which includes a novel brake construction automatically operable with operation of the motor of the car. Further, my invention provides a new chassis suspension for miniature racing cars which enhances the road-hugging capabilities of miniature cars. My invention also provides a miniature racing car which is inexpensive, simple in design, and easy to manufacture and maintain.

In the foregoing, specific examples of my racing cars have been described in detail. Modifications and changes, however, may occur to those skilled in the art without departing from the spirit of my invention. Therefore, I intend that my invention be limited in scope only by the following claims.

I claim:

1. In a miniature racing car:
an axle having wheels at the ends thereof;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
means supporting said drive means with said pinion gear continuously meshing with said drive gear to rotate said drive gear and said axle in response to operation of said drive means rotating said drive shaft and further supporting said drive means and drive shaft for movement relative to said axle with rotation of said pinion gear;
and brake means automatically operable with said drive means for normally preventing rotation of said axle and responsive to said movement of said drive means and drive shaft relative to said axle for allowing rotation of said axle.

2. In a miniature racing car:
an axle having wheels at the ends thereof;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
means supporting said drive means with said pinion gear continuously meshing with said drive gear to rotate said drive gear and said axle in response to operation of said drive means rotating said drive shaft and further supporting said drive means and drive shaft for movement relative to said axle with rotation of said pinion gear;
and brake means automatically operable with said drive means and including means connected to said axle and said drive means for normally preventing the rotation of said axle and responsive to said movement of said drive means and drive shaft relative to said axle for allowing rotation of said axle.

3. In a miniature racing car:
an axle having wheels at the ends thereof;

an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
means supporting said drive means with said pinion gear continuously meshing with said drive gear to rotate said drive gear and said axle in response to operation of said drive means rotaing said drive shaft and further supporting said drive means and drive shaft for movement relative to said axle with rotation of said pinion gear;
a brake band around said axle for normally preventing rotation of said axle;
and means connected one end of said brake band to said drive means for movement therewith such that brake band loosens around said axle with said movement of said drive means relative to said axle to allow rotation of said axle.

4. In a miniature racing car:
an axle having wheels at the ends thereof;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
and means supporting said drive means for limited movement relative to said axle with said pinion gear continuously meshing with said drive gear to initially roll on said drive gear and move said drive means relative to said axle to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

5. In a miniature racing car:
a car body-support frame;
an axle supported by said frame;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means and an opposite end connected to said frame;
and means supporting said drive means for limited movement relative to said axle with said pinion gear continuously meshing with said drive gear to initially roll on said drive gear and move said drive means relative to said axle to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

6. In a miniature racing car:
an axle having wheels at the ends thereof;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
brake means automatically operative with operation of said drive means for normally preventing rotation of said axle and including a brake band around and tightly engaging an outer surface of said drive gear with one end of said brake band connected to said drive means;
and means supporting said drive means for limited movement relative to said axle with said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative to said axle to loosen said brake band around said drive gear and to then rotate said drive gear,

all in response to operation of said drive means rotating said drive shaft.

7. In a miniautre racing car:
an axle having wheels at the ends thereof;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
brake means automatically operative with operation of said drive means for normally preventing rotation of said axle and including a generally spiral-shaped brake band around and tightly engaging an outer surface of said drive gear with an inner end connected to said drive shaft adjacent said pinion and an outer end connected to said drive shaft on the side of said inner end remote from said pinion;
and means supporting said drive means for limited movement relative to said axle with said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative so said axle to loosen said brake band around said drive gear and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

8. In a miniature racing car:
a car body-support frame;
an axle supported by said frame;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear connected to said drive shaft for rotation therewith;
brake means automatically operative with operation of said drive means for normally preventing rotation of said axle and including a generally spiral-shaped brake band around and tightly engaging an outer surface of said drive gear with an inner end connected to said drive shaft adjacent said pinion gear and an outer end connected to said frame on a side of said inner end remote from said pinion;
and means supporting said drive means for limited movement transverse to said axle with said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative to said axle to loosen said brake band around said drive gear and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

9. In a miniature racing car:
an axle;
an axle drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear fixed to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
and means supporting said drive means and drive shaft for limited generally vertical movement, said drive shaft lying in a generally horizontal plane, and said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative to said axle to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

10. In a miniature racing car:
a car body-supporting frame;
an axle supported by said frame;
a drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear fixed to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being fixed to said drive shaft;
and means hinged to said frame on one side of said axle to support said drive means and drive shaft for generally vertical rocking movement, said drive shaft lying in a generally horizontal plane, and said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means upward to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

11. In a miniature racing car:
a car body-support frame;
an axle supported by said frame;
a drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear fixed to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
and support means mounted for rotation about said axle for supporting said drive means and drive shaft for generally vertical rocking movement relative to said axle, said drive shaft lying in a generally horizontal plane, and said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means upward relative to said axle to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

12. In a miniature racing car:
a car body-support frame;
an axle supported by said frame;
a drive gear connected to said axle;
operator controlled drive means including a drive shaft;
a pinion gear fixed to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
support means mounted for rotation about said axle for supporting said drive means and drive shaft for generally vertical rocking movement relative to said axle, said drive shaft lying in a generally horizontal plane, and said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means upward relative to said axle to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft;
and means between said frame and said drive means for balancing said drive means upwardly relative to said axle.

13. A miniature racing car comprising:
a front axle having wheels at the ends thereof;
a rear axle having wheels at the ends thereof;
a body-supporting frame including an elongated front frame supporting said front axle and extending from said front axle over and rearward beyond said rear axle and an elongated rear frame supporting said rear axle and extending under said front frame rearward beyond said rear axle and forward between said front and rear axles;
means pivotally connecting said rear frame to said front frame between said front and rear axles;
spring means between said front and rear frames to the rear of said rear axle for urging said front and rear frames apart at that point;
a drive gear connected to said rear axle;

operator controlled drive means including a drive shaft;
a pinion gear fixed to said drave shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
and means for supporting said drive means for limited movement relative to said axle with said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative to said axle to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

14. A miniature racing car comprising:
a front axle having wheels at the ends thereof;
a rear axle having wheels at the ends thereof;
a body-supporting frame including an elongated front frame supporting said front axle and extending from said front axle over and rearward beyond said rear axle and an elongated rear frame supporting said rear axle and extending under said front frame rearward beyond said rear axle and forward between said front and rear axles;
means pivotally connecting said rear frame to said front frame midway between said front and rear axles;
spring means between said front and rear frames to the rear of said rear axle for urging said front and rear frames apart at that point;
a drive gear fixed to said rear axle;
operator controlled drive means including a drive shaft;
a pinion gear fixed to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
and means hinged to the forward end of said rear frame for supporting said drive means and drive shaft for vertical rocking movement, said drive shaft lying in a generally horizontal plane, and said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative to said axle to loosen said brake band around said axle and to then rotate said drive gear, all in response to operation of said drive means rotating said drive shaft.

15. A miniature racing car comprising:
a front axle having wheels at the ends thereof;
a rear axle having wheels at the ends thereof;
a body-supporting frame including an elongated front frame supporting said front axle and extending from said front axle over and rearward beyond said rear axle and an elongated rear frame supporting said rear axle and extending under said front frame rearward beyond said rear axle and forward between said front and rear axles;
means pivotally connecting said rear frame to said front frame between said front and rear axles;
spring means between said front and rear frames to the rear of said rear axle for urging said front and rear frames apart at that point;
a drive gear fixed to said rear axle;
operator controlled drive means including a drive shaft;
a pinion gear fixed to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
and means mounted for rotation about said axle for supporting said drive means and said drive shaft for vertical rocking movement relative to said axle, said drive shaft lying in a generally horizontal plane, and said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative to said axle to loosen said brake band around said axle and to rotate said drive gear, all in response to rotation of said drive shaft by said drive means.

16. A miniature racing car comprising:
a front axle having wheels at the ends thereof;
a rear axle having wheels at the ends thereof;
a body-supporting frame including an elongated front frame supporting said front axle and extending from said front axle over and rearward beyond said rear axle and an elongated rear frame supporting said rear axle and extending under said front frame rearward beyond said rear axle and forward between said front and rear axles;
means pivotally connecting said rear frame to said front frame between said front and rear axles;
spring means between said front and rear frames to the rear of said rear axle for urging said front and rear frames apart at that point;
a drive gear fixed to said rear axle;
operator controlled drive means including a drive shaft;
a pinion gear fixed to said drive shaft for rotation therewith;
a brake band around said axle for preventing rotation of said axle when said drive means is not in operation, one end of said brake band being connected to said drive means;
means mounted for rotation about said axle for supporting said drive means and said drive shaft for vertical rocking movement relative to said axle, said drive shaft lying in a generally horizontal plane, and said pinion gear continuously meshing with said drive gear to initially roll over said drive gear and move said drive means relative to said axle to loosen said brake band around said axle and to rotate said drive gear, all in response to rotation of said drive shaft by said drive means;
and spring means fixed between said fear frame and said drive means for urging said drive means upward relative to said axle.

17. A miniature racing car comprising:
a front axle having wheels at the ends thereof;
a rear axle having wheels at the ends thereof;
a body-supporting frame including an elongated front frame supporting said front axle and extending from said front axle over and rearward beyond said rear axle and an elongated rear frame supporting said rear axle and extending under said front frame rearward beyond said rear axle and forward between said front and rear axles;
means pivotally connecting said rear frame to said front frame between said front and rear axles;
and spring means between said front and rear frames to the rear of said rear axle for urging said front and rear frames apart at that point.

18. In a miniature racing car:
an axle having wheels at the ends thereof;
operator controlled drive means including a drive shaft for turning in response to operation of said drive means;
means supporting said drive means for limited transverse movement relative to said axle;
torque transmission means between said axle and said drive shaft for turning said axle and for moving said drive means relative to said axle in response to operation of said drive means;
and brake means automatically operable with said drive means for normally preventing rotation of said axle and responsive to said movement of said drive

means transverse to said axle for allowing rotation of said axle.

19. In a miniature racing car:

an axle having wheels at the ends thereof;

operator controlled drive means for turning said axle;

means supporting said drive means for limited transverse movement relative to said axle with operation of said drive means; and

brake means automatically operable with said drive means for normally preventing rotation of said axle and responsive to movement of said drive means

transverse to said axle for allowing rotation of said axle.

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ARTHUR L. LA POINT, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,202,109 August 24, 1965

Edward R. Stewart

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 14, for "connected" read -- connecting --; line 16, before "brake" insert -- said --; column 7, line 21, for "so" read -- to --; line 68, for "body-supporting" read -- body-support --; column 10, line 44, for "fear" read -- rear --.

Signed and sealed this 22nd day of March 1966.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents