May 12, 1970 H. W. LA BRANCHE ETAL 3,510,981

VEHICLE AND TRACK COMBINATION TOY

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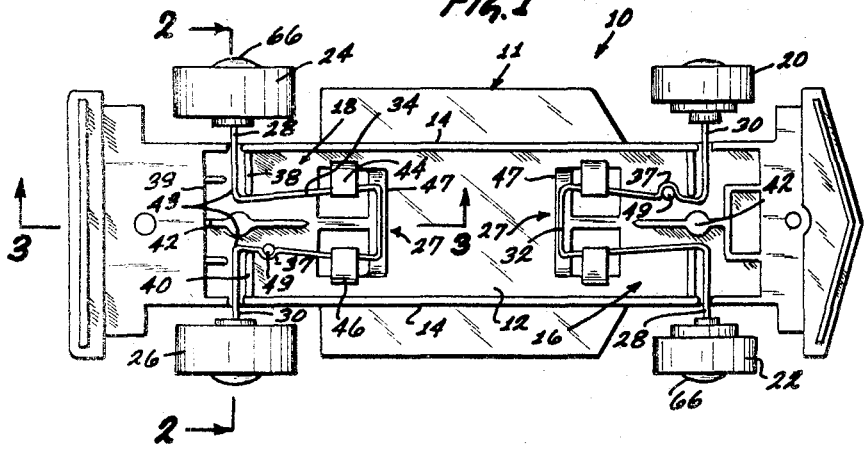
FIG. 1



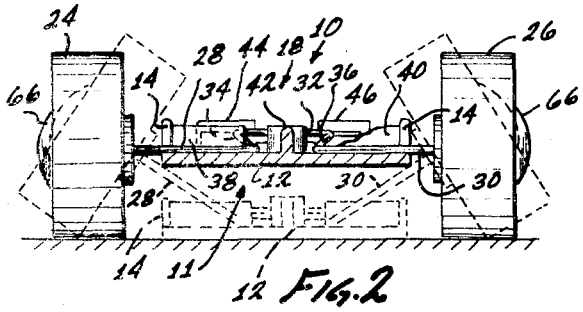


FIG. 2

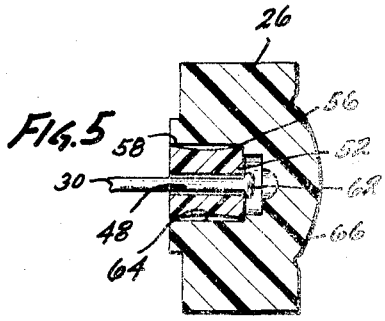


FIG. 5

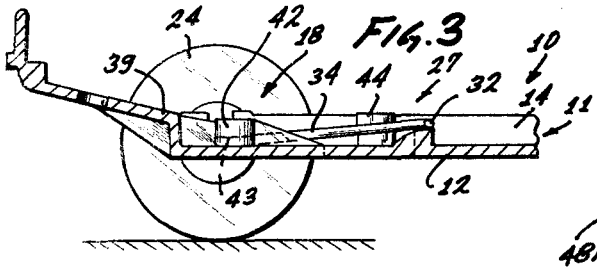


FIG. 3

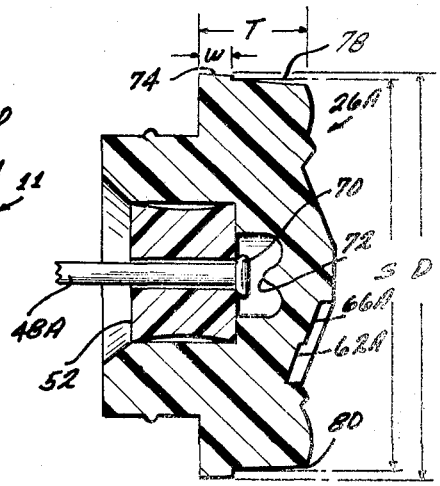


FIG. 6

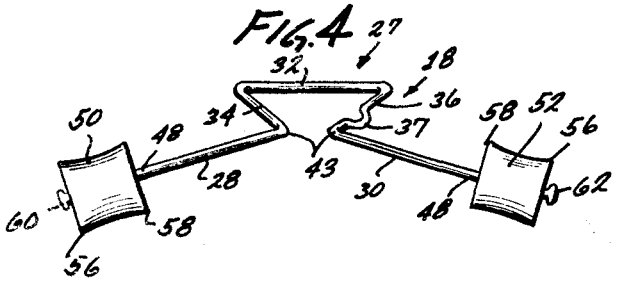


FIG. 4

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Fig. 7

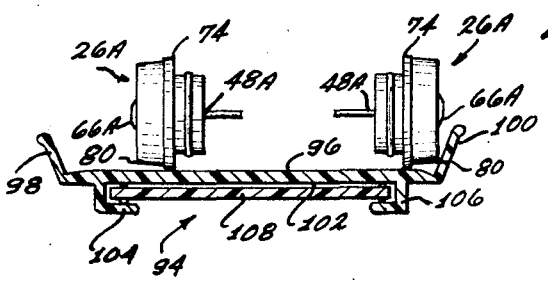


Fig. 8

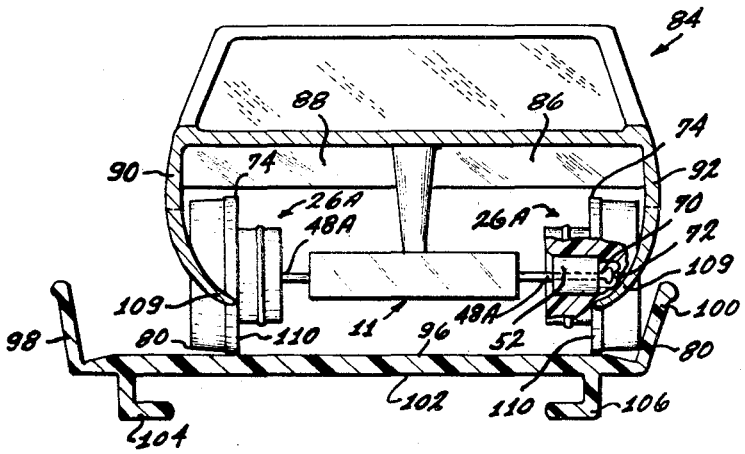


Fig. 10

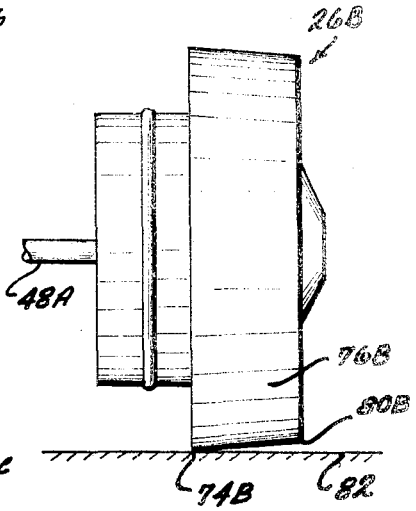
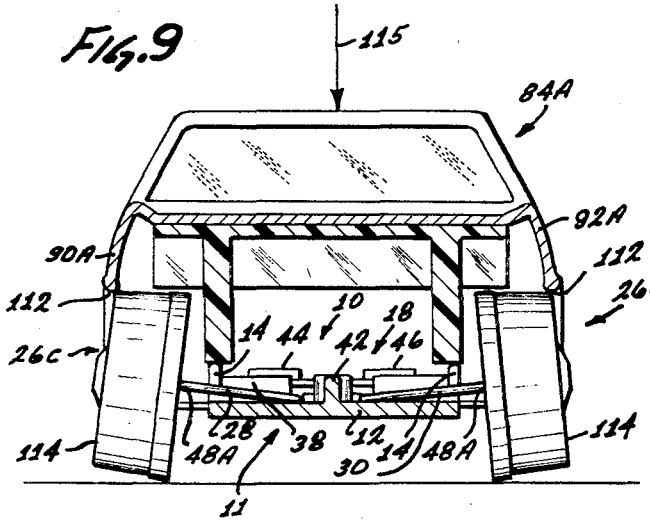


Fig. 9



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nited States Patent ffice 3,510,981
Patented May 12, 1970

3,510,981

VEHICLE AND TRACK COMBINATION TOY

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Continuation-in-part of application Ser. No. 777,284, Nov. 20, 1968. This application Feb. 6, 1969, Ser. No. 797,064

Int. Cl. A63h *11/10, 17/00*

U.S. Cl. 46—202 16 Claims

ABSTRACT OF THE DISCLOSURE

A low friction toy vehicle body and chassis with wheels rotatably and resiliently mounted on the chassis for unpowered operation on a track having vehicle-confining walls, wherein the body, chassis, wheels, resilient mounting means and walls are dimensioned and arranged to prevent contact of the body with the wheels or walls during normal operation of the vehicle on the track while permitting the wheels to bottom out on the body without damage to the resilient mounting means.

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of patent application Ser. No. 777,284 by Harvey W. La Branche and Howard F. Newman filed Nov. 20, 1968, now Pat. 3,483,654, which application is in turn, a continuation-in-part of patent application Ser. No. 696,199 filed Jan. 8, 1968.

BACKGROUND OF THE INVENTION

The background of the invention will be set forth in two parts.

Field of the invention

The present invention pertains generally to the field of toy cars and more particularly to an improvement in a toy vehicle and track combination including diverse means for minimizing frictional forces acting on the vehicle during unpowered operation thereof on a track having vehicle-confining walls.

Description of the prior art

Toy car constructions which employ a pair of rigid axles snapped onto the bottom of the chassis of the car are well known. Wheels are rotatably mounted upon the ends of each of these axles. Such axles have a disadvantage that they do not permit resilient wheel mounting, and thus lack authenticity. Another disadvantage resides in the fact that the rigid axle must have a comparatively large diameter to prevent the axle from bending beyond its yield point when the car is subjected to a downward force during play. Such large diameters result in excessive frictional drag between the wheels and their associated axles.

Such prior art patents as United States Pats. Nos. 2,749,662; 3,009,287 and 3,280,500 suggest to mount such rigid axles in slots and permit the axles to deflect upwardly under the influence of spring means in an attempt to gain a certain degree of authenticity. However, the constructions disclosed in these patents have the disadvantages that they are comparatively expensive to manufacture and assemble and that the axles are of a comparatively large diameter resulting in excessive frictional drag. In some vehicle constructions, additional friction is caused

at certain times during operation of the vehicle on a track by engagement of the vehicle body with the vehicle-confining walls of the track.

SUMMARY OF THE INVENTION

In view of the foregoing factors and conditions characteristic of toy car constructions, it is a primary object of the present invention to provide a new and improved toy car construction not subject to the disadvantages enumerated above and having a body and chassis with wheels rotatably and resiliently mounted on the chassis for unpowered operation on a track having vehicle-confining walls, wherein the body, chassis, wheels, resilient mounting means and walls are dimensioned and arranged to minimize frictional drag during operation of the vehicle on the track and to minimize damage to the resilient mounting means when the vehicle is subjected to rough handling.

Another object of the present invention is to provide an improvement in an undercarriage for a toy vehicle including axle means having at least one pair of small-diameter axle shaft portions substantially co-axial with each other and being connected to torsionally-resilient member means facilitating movement of the axle shaft portions with respect to the vehicle body by torsion deformation of the member means.

Still another object of the present invention is to provide an undercarriage of the type described wherein the wheels are resiliently mounted with respect to the undercarriage to provide authentic springing.

Still another object of the present invention is to provide resiliently mounted wheels upon the undercarriage of a toy car which has sufficient displacement with respect to the undercarriage that the top of the wheel may bottom out against the fender opening surfaces of the car without exceeding the yield point of the axles.

A further object of the present invention is to provide a toy vehicle body and chassis combination for unpowered operation on a track having vehicle-confining walls, wherein the body will be free of contact with the walls during normal operation of the vehicle on the track.

Another object of the present invention is to provide wheel mounting means for mounting wheels upon the axles of a toy car wherein a hub is mounted on the end of an axle and a wheel is resiliently snapped onto the hub.

According to the present invention, an improvement is provided in the undercarriage and body in a toy vehicle including axle means and wheel means rotatably mounted upon the axle means. The axle means has at least one pair of axle shaft portions substantially coaxial with each other and each having an outboard end receiving an associated one of said wheel means and an inboard end. A torsionally-resilient member means is connected to each of the inboard ends and the torsionally-resilient member means is connected to the vehicle body in such a manner that the axle shaft portions are movable with respect to the body by torsion deformation of the member means without substantial bending deformation of the axle shaft portions. Frictional drag on the wheels is minimized by making the axle shaft portions of a much smaller diameter material than is usually employed in toy cars. By way of illustration, but not of limitation, the axle shaft portions may be made from a 20 thousandths, 0.8% carbon content, extra-high strain mandolin wire tinned and torsion straightened.

A pair of axle shaft portions and their associated torsionally-resilient member means may be formed from a

single piece of wire having a bight portion connecting the member means together forming a U-shaped member therewith. The axle shaft portions extend somewhat downwardly from the U-shaped member. The resulting assembly is secured to the top of the undercarriage and the body is assembled thereto in such a manner that the axle shaft portions are stressed into a substantially planar position, whereby the axle shaft portions assume a substantially horizontal position making all four wheels lie in the same plane with the body lying inboard of the outer face of the wheels at all points below at least the center of the wheels. The axle shaft portions may be moved with respect to the body until the body bottoms out on the wheels without exceeding the yield point of the axle shaft portions or the torsionally-resilient member means.

Wheel mounting is accomplished by rotatably mounting hubs upon each axle. The hubs are retained from movement off of the ends of the axles by swaging the axle ends. The wheels resiliently snap onto these hubs. Each wheel carries a simulated hub cap which is closed over the hub so that the simulated hub cap prevents inward motion of the wheel on the axle by engagement with the end of the axle.

Each axle means may be quickly assembled to a vehicle by snapping the axle means in place. This, coupled with the one-piece construction from comparatively small-diameter material, results in an advantageous structure with little more cost than disadvantaged prior art structures.

In one embodiment of the invention, frictional drag on the wheels is minimized by providing an inwardly-directed rounded protuberance on each wheel that can bear against the axle and serve as a thrust bearing. The swaged ends of the axles are provided with a flat outer face, while the protuberance is positioned to bear against the center of this face. To further reduce friction, the perimeters of the wheels are formed with only a narrow rim portion of full diameter that contacts the roadway, but which still gives the appearance of a wide tire of the type generally used on automobiles.

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings in which like reference characters refer to like elements in the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of a toy vehicle frame employing an undercarriage of the present invention;

FIG. 2 is an enlarged, cross-sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a partial cross-sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is an enlarged perspective view of a wheel-suspension means and associated wheel hub forming a part of the vehicle shown in FIG. 1;

FIG. 5 is an enlarged cross-sectional view of a wheel and axle assembly forming a part of the vehicle shown in FIG. 1;

FIG. 6 is an enlarged cross-sectional view of a wheel and axle assembly constructed in accordance with another embodiment of the invention;

FIG. 7 is a cross-sectional view of a track showing a wheel and axle assembly in position thereon;

FIG. 8 is a cross-sectional view of a complete vehicle and track assembly of the present invention;

FIG. 9 is a cross-sectional view of a modified vehicle of the type shown in FIGURE 8; and

FIG. 10 is an elevational view of a modified wheel of the type shown in FIGURE 6.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring again to the drawings, a toy vehicle constituting a presently preferred embodiment of the invention, generally designated **10**, includes an undercarriage **11** having a frame **21** which is generally planar on its undersurface, as is shown in FIG. 2. If desired, the underside can carry a design configuration which represents the bottom view of a conventional automobile. Upstanding flanges **14** are formed around the edge of frame **12** to strengthen it and to also conveniently serve as a means for interlocking with a toy car body (not shown) which may be mounted on the top of frame **12**. Alternatively, frame **12** may form an integral part of a car body. Front axle means **16** and rear axle means **18** are mounted on the top of frame **12**. Front axle means **16** carries front wheel means **20** and **22** while rear axle means **18** carries rear wheel means **24** and **26**.

Front and rear axle means **16** and **18** are identical in their configuration and identical in their mounting upon frame **12**. For purposes of convenience, only rear axle means **18** will be described in detail, it being understood that the description also applies to the front axle means and its mounting.

Axle means **18** is formed with a U-shaped center portion **27** and axle shaft portions **28, 30** extending therefrom. The U-shaped center portion **27** has a base or bight **32** which is preferably substantially straight. Sides or torsionally-resilient member means **34, 36** extend away from base **32** and preferably are directed somewhat toward each other at an acute angle, as is shown in FIG. 1. Axle shaft portions **28, 30** are positioned on the ends of sides **34, 36**, respectively, and extend laterally past the sides of frame **12**. Side **36** preferably has a loop **37** formed therein to serve as a locating means upon assembly as is hereinafter described.

The entire rear axle means **18** is more of a unitary structure, preferably by being made from 0.8% carbon content, extra-high strain mandolin wire which has been tinned and torsion straightened. Furthermore, in the unstressed condition, axle shaft portions **28, 30** are directed slightly downwardly from the plane defined by base **32**. The general shape in the unstressed condition is shown in FIG. 4. The amount of this deflection in the unstressed state from the reference plane of base **32**, in conjunction with the resiliency and size of the material from which rear axle means **18** is made, determines the amount of force which must be applied to the axle when it is in its mounted position, before it is deflected.

As is illustrated in FIGS. 1, 2 and 3, the top of frame **12** is generally planar, and extending up from the planar top surface are the peripheral flanges **14**. In addition, transverse flanges **38, 39** and **40** extend upward from the plane of the top of frame **12**. Flanges **38** and **40** are directed toward each other, but terminate short of each other. Flanges **38** and **40**, in conjunction with flange **39**, define spaces in which lie axle shaft portions **28, 30**. Thus, these flanges restrain these axle shaft portions **28, 30** from substantial forward or rearward motion. In addition, a boss **42** lies between the inboard ends **43** of axle shaft portions **28, 30** to keep them separated, while the transverse flanges **38** and **40** terminate closely adjacent to the outer sides of sides **34** and **36**. Thus, axle shaft portions **28, 30** are restrained from substantial axial motion. Hooks **44** and **46** are preferably integrally formed with frame **12** and are positioned to extend over the top of sides **34** and **36** to retain base **32** against a wedge **47** on the top surface of frame **12**. The raising of base **32** away from the general plane of the top surface of frame **12** stresses sides **34** and **36** so that the junctures of these sides with axle shaft portions **28, 30** lie against the top surface. Thus, upward loads upon the wheels causes rotation of the axle shaft

portions 28, 30 about their inboard ends 43. Rotation at this point causes torsion deformation in the sides 34 and 36 and it is this torsion deformation that provides the principal amount of resilient deflection for the wheels.

Since the sides 34 and 36 are restrained against the planar top of frame 12, axle shaft portions 28, 30 are forced into a position wherein they are co-axial. Thus, the axle means 18 is restrained so that the axle shaft portions 28, 30 cannot move to the unstressed position of FIG. 4, but are maintained so that they cannot move below the planar position. By this means, the axle shaft portions are resiliently restrained in a co-axial position as is illustrated in solid lines in FIG. 2. When upward force is applied to the ends of the axle shaft portions, the pre-stress of the axle means must be overcome before deflection occurs. This stress is such that under the ordinary weight of the toy car, no deflection occurs, but upon the application of further downward force, the outboard ends 48 of axle shaft portions 28, 30 can be resiliently displaced upward. The retention of sides 34 and 36 twist in torsion. The amount of permissible displacement of the ends 48 of the axle shaft portions is such that the axle means 18 is not over stressed when deflections move the bottom of frame 12 into the same plane as the bottoms of the wheels, as shown in broken lines in FIG. 2. Thus, the yield point of axle means 18 is not exceeded even when the undercarriage is bottomed.

Since the axle means should be correctly assembled onto the frame, in view of the unstressed shape of the axles, a pin 49 is formed on top of frame 12. When the axle is correctly positioned on the frame, loop 37 embraces pin 49. If an attempt is made to insert the axle means in the incorrect position, side 34 would engage upon pin 49 and thus completion of assembly would be prohibited.

Referring to FIGS. 4 and 5, hubs 50 and 52 are respectively positioned upon the ends 48 of axle shaft portions 28, 30. Hubs 50 and 52 each have an opening therethrough to be rotatable on their respective axle shaft portions. Furthermore, hubs 50 and 52 are preferably made of a synthetic polymer, composition material, such as an acetal resin or a polytetrafluoro ethylene, of such nature that they are somewhat resilient, have a low coefficient of friction and are slightly concave so that they are formed with slight ridges 56, 58 to retain the wheels in position thereon. Hubs 50 and 52 are maintained on their respective axle shaft portions by swaged knobs 60 and 62 formed on ends 48 thereof, after the installation of the hubs.

As seen in FIG. 5, wheel 26 has a hub bore 64 therein. Preferably, wheel 26 is also made out of synthetic polymer composition material so that it is somewhat resilient. Hub bore 64 is of such diameter that, by resilient deflection, wheel 26 can be passed over and snapped over ridges 56, 58 which maintain wheel 26 in position. A simulated hub cap 66 is formed on the outside of wheel 26 and acts as an axle stop. Knob 62 engages upon the inside surface of the hub cap 56 to prevent the wheel and hub cap assembly from substantial inward motion upon the axle shaft portion 30. It it understood that the construction of each of the wheels 20, 22, 24 and 26 is described with respect to FIG. 5 with the possible exception of the size and external shape of the wheel itself. This wheel construction permits the rapid assembly and firm retention of the wheels upon undercarriage 11.

FIG. 6 illustrates another embodiment of the invention constructed for a further reduction of frictional drag on the wheels. This embodiment of the invention is identical to the vehicle described above except for the construction of the ends of the axle shaft portions and the wheels. In particular, the shaft portion 48*a* has an extreme outer end or boss 62*a* having a flat outer face 70, and the wheel 26*a* has a protuberance 72 that can bear against the center of the boss, to provide a thrust bearing of low friction. In addition, the wheel 26*a* is provided with a narrow rim portion 74 to provide low roadway friction, and yet maintain the appearance of a wide tread tire of the type generally used on modern automobiles.

One source of vehicle drag results from frictional contact between the boss 62*a* at the end of the axle, and the wheel hub cap portion 66*a* that serves to limit inward wheel movement. While the boss and wheel hub portion may be in contact only part of the time, the added friction by poor thrust bearing construction can add significant drag. This is particularly true where other sources of friction have been minimized, as by use of a small diameter axle for engaging a radial bearing provided by the hub 52.

The boss 62*a* and wheel hub cap 66*a* are constructed to provide a minimum of friction when they are in contact, by providing for contact at the center or axis of the axle. The axle center is where any friction produces the least counter-torque. By making the face 70 of the axle end flat, and providing the inwardly-directed, rounded projection or protuberance 72 on the inner surface of the outer side of the wheel at the hub cap portion 66*a*, contact can be maintained stable near the axis of the axle. The face 70 can also be provided with a slight concavity to help maintain contact at the center. Instead of a rounded protuberance, a straight tapered protuberance or other shape can be employed. However, the extreme inner end of the protuberance should have a surface area of contact which is much smaller than the surface area of face 70.

Road friction is reduced by the use of a narrow outer rim portion 74, which has a width W less than half the total width T of the wheel rim 76. The outer rim portion has a diameter D which is only slightly greater than the greatest diameter S of the other portion 78 of the rim. The greater diameter D results in a narrow road-engaging portion or footprint to provide for low road friction and could be achieved by merely using a thin wheel. However, this would detract from the appearance of the wheel, which is made to simulate the wide tread tires generally used in modern automobiles. By using a wide wheel, with all portions of almost full diameter, and all having the same color, such as black, the wheel has a wide tread appearance. For relatively hard rims, the diameter D can be made only a few percent greater than the diameter S to achieve low road friction. So long as the diameter D is no more than about 10% greater than diameter S, the departure from a constant diameter is not easily noticed. The portion 78 is preferably provided with a slight taper between a section adjacent to rim portion 74 and a section furthest from it, so that, even if the wheel is tilted slightly, the outer ridge 80 is unlikely to contact the roadway.

FIG. 10 shows a wheel 26*b* which may be mounted on the axle 48*a* in place of the wheel 26*a*. The wheel 26*b* may be identical to the wheel 26*a* except that the narrow outer rim portion 74*a* may be dispensed with by making the wheel rim 76*b* of the wheel 26*b* of frusto-conical shape having a large-diameter portion 74*b* forming means for contacting a riding surface and a small diameter portion 80*b* corresponding to the outer ridge 80 on the wheel 26*a*. The portion of rim 76*b* extending between the large-diameter portion 74*b* and the small-diameter portion 80*b* comprises means axially displaced from portion 74*b* making no contact with the riding surface, represented by line 82 in FIG. 10, during normal operation of wheel 26*b*.

Referring now to FIGS. 7 and 8, the undercarriage 11 (sometimes referred to herein as a chassis) of FIGS. 1–3 may be provided with the wheels 26*a* and axles 48*a* of FIG. 6 and may carry a vehicle body 84 having substantially horizontal reinforcing ribs 86, 88 and side walls 90, 92.

The wheels **26***a* are adapted to run upon a track **94**, shown herein for purposes of illustration, but not of limitation as comprising a track of the type disclosed in co-pending application Ser. No. 779,874, filed Nov. 29, 1968, held by the assignee of this application and hereby incorporated herein by reference.

Track **94** includes an upper surface portion **96** and a pair of vehicle-confining walls **98, 100** which extend on either side of the upper surface portion **96** for confininfi the wheels **26***a* to track **94**. Track **94** also includes a lower or connecting surface portion **102** which carries a pair of connector-engaging members **104, 106** receiving a connector **108** for connecting a plurality of tracks **94** together.

The reinforuing webs **86, 88** are positioned directly over wheels **26***a* and are sufficiently close thereto that wheels **26***a* will bottom-out thereon preventing undercarriage **11** from moving to the broken line position shown to FIG. 2 upon the application of a large downward force on body **84**.

It is an important feature of this invention that the side walls **90, 92** each has a lower edge **108** which extends inboard of its associated wheel **26***a* to a point adjacent the inner face **110** thereof. This is accomplished by sloping side walls **90, 92** inwardly and downwardly from a point above the center line of an associated wheel **26***a*. This minimizes frictional drag on body **84** by preventing it from ever contacting walls **98, 100** regardless of whether protuberance **72** is contacting face **70**, as shown in FIG. 8, or hub **52**, as shown in FIG. 6.

Referring now to FIG. 9, the body **84** shown in FIG. 8 may be replaced with a body **84***a* which is mounted on an undercarriage **11** identical to that shown in FIGS. 1–3 which is provided with wheels **26***c* identical to the one shown in FIG. 6 except that the portion of wheels **26***c* which carries bearing **52** is not reduced in diameter. Body **84***a* includes wheel wells **112** upon which wheels **26***a* bottom out w hen body **84***a* is subjected to a large downward force, represented by arrow **114**.

Body **84***a* includes side walls **90***a*, **92***a* which are positioned inboard of the outer face **114** of each wheel **26***c* and remain inboard thereof regardless of whether wheels **26***c* are in the position shown for the right hand wheel **26***a* in FIG. 10 or the position shown for the wheel **26***a* in FIG. 6. Thus, when the combination shown in FIG. 9 is run on track **94**, body **84***a* will not contact walls **98, 100** creating frictional drag.

Although particular embodiments of the 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 of the type adapted to travel on a smooth surface track of the type having upstanding, vehicle-confining walls at each edge thereof, comprising:

a chassis having a plurality of wheels mounted thereon for travel on the track, each said wheel having an outer face and a rim, the lower portion of said face being adjacent the walls when the vehicle is on the track; and

a body mounted on said chassis, said body including fender means extending substantially over the upper portions of at least two said wheels and directed downwardly and inwardly into sidewalls positioned inboard of said lower portions of said faces at all points adjacent the walls, whereby only said wheels will contact the walls during operation of said vehicle on said track thereby minimizing the likelihood that said body will frictionally engage the vehicle-confining walls during said travel.

2. A toy vehicle as stated in claim **1** including resilient means mounting said wheels on said chassis for movment in a vertical plane with respect to said chassis.

3. A toy vehicle as stated in claim **2** wherein said fender means are positioned in the path of travel of said wheels in said vertical plane at such a location that said wheels will bottom out on said fender means before said resilient mounting means is stressed beyond its yield point during movement of said wheels in said vertical plane.

4. A toy vehicle as stated in claim **2** wherein said resilient mounting means includes axle means for each of said wheels, said axle means each having an outboard end provided with an enlarged portion and wherein each of said wheels has an outer hub portion and an inner hub portion trapping said enlarged axle portion therebetween, for minimizing axial displacement of said wheels on said axle means, whereby said wheels are prevented from moving inboard of said sidewalls of said body sufficiently to permit said body to frictionally engage said vehicle-confining walls.

5. A toy vehicle as stated in claim **1** wherein each of said rims has:

a predetermined width, a large diameter portion providing a riding surface, a small-diameter portion defining one edge for an associated one of said wheels and an axially-extending portion connecting said large-diameter portion to said small-diameter portion.

6. A wheel as stated in claim **5** wherein said rim is of frustoconical shape, said large-diameter portion comprising the inner edge of said rim and said small-diameter portion comprising the outer edge thereof.

7. A wheel as stated in claim **5** wherein said large-diameter portion has a first predetermined width and said axially-extending portion has a second predetermined width substantially greater than said first width, said small-diameter portion being only slightly smaller in diameter than said large-diameter portion, whereby said wheel provides low road friction with a wide tire appearance.

8. A wheel as stated in claim **5** including means defining a hub bore for receiving a cylindrical, radial bearing and an outer hub portion closing said bore.

9. A wheel as stated in claim **6** wherein said small-diameter portion is at least 90% of the diameter of said large-diameter portion.

10. The toy vehicle as set forth in claim **1** further including track of the type described weherin said vehicle-confining walls are directed outwardly whereby only the lower outer edge of each said wheel will engage said upwardly and outwardly directed sidewalls.

11. A toy vehicle of the type adapted to travel on a smooth surface track of the type having upstanding, vehicle confining walls at each edge thereof, comprising: a chassis having a plurality of wheels mounted thereon for travel on the track, each said wheel having an outer face and a rim, the lower portion of said face being adjacent one of the vehicle confining walls when said vehicle is on the track, and said rim being of predetermined width and having a large diameter inner portion providing a riding surface and a small diameter outer portion, said large diameter inner portion being adjacent said chassis and said small diameter outer portion being adjacent a vehicle confining wall when the toy vehicle is traveling on the track and said small diameter outer portion being only slightly smaller in diameter than said large diameter inner portion thereby providing the appearance that said riding surface comprises substantially the entire width of said rim.

12. A toy vehicle as set forth in claim **11** wherein said rim is of substantially frustoconical shape and defines a smooth transition from said large diameter portion to said small diameter portion thereby providing a riding surface substantially narrower than the overall width of said rim.

13. A toy vehicle as set forth in claim **11** wherein said large diameter portion and said small diameter portion of said rim are distinctly defined by a step therebetween,

said large diameter portion being substantially narrower than said small diameter portion.

14. A toy vehicle as set forth in claim **13** wherein said small diameter portion of said rim is of frustoconical shape.

15. A toy vehicle as set forth in claim **13** wherein said large diameter portion of said rim is of frustoconical shape thereby providing a riding surface substantially narrower than the width of the overall said large diameter portion.

16. A toy vehicle as set forth in claim **15** wherein said small diameter portion of said rim is of frustoconical shape.

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U.S. Cl. X.R.

46—221

Disclaimer

3,510,981.—*Harvey W. La Branche*, Palos Verdes Peninsula, and *Howard F. Newman*, Los Angeles, Calif. VEHICLE AND TRACK COMBINATION TOY. Patent dated May 12, 1970. Disclaimer filed July 17, 1970, by the assignee, *Mattel, Inc.*

Hereby disclaims the terminal portion of the term of the patent subsequent to Dec. 16, 1986.

[*Official Gazette September 8, 1970.*]