Feb. 18, 1969 J. LEATH 3,428,310

TOY APPARATUS WITH MANUALLY TILTABLE PLATFORM

Filed May 24, 1966 Sheet 1 of 2

FIG. 1

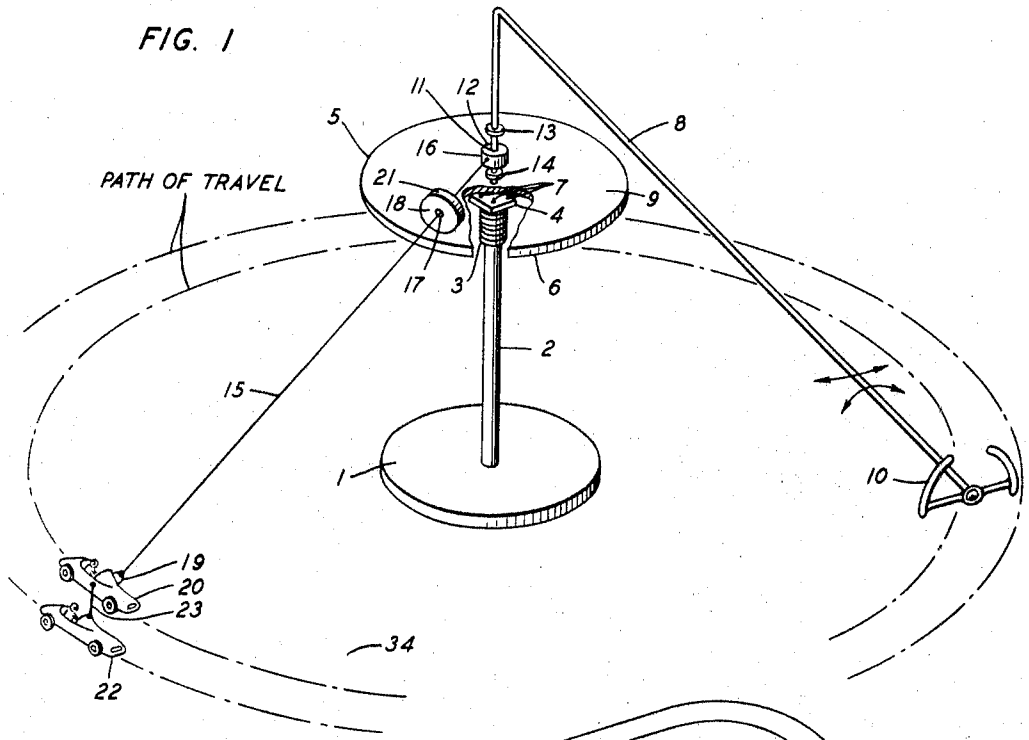
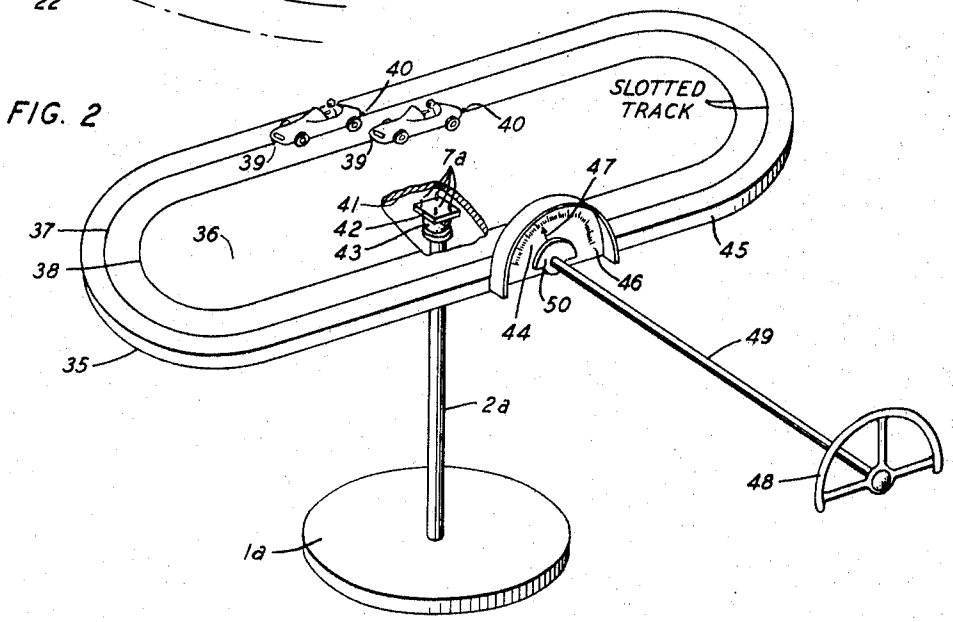


FIG. 2



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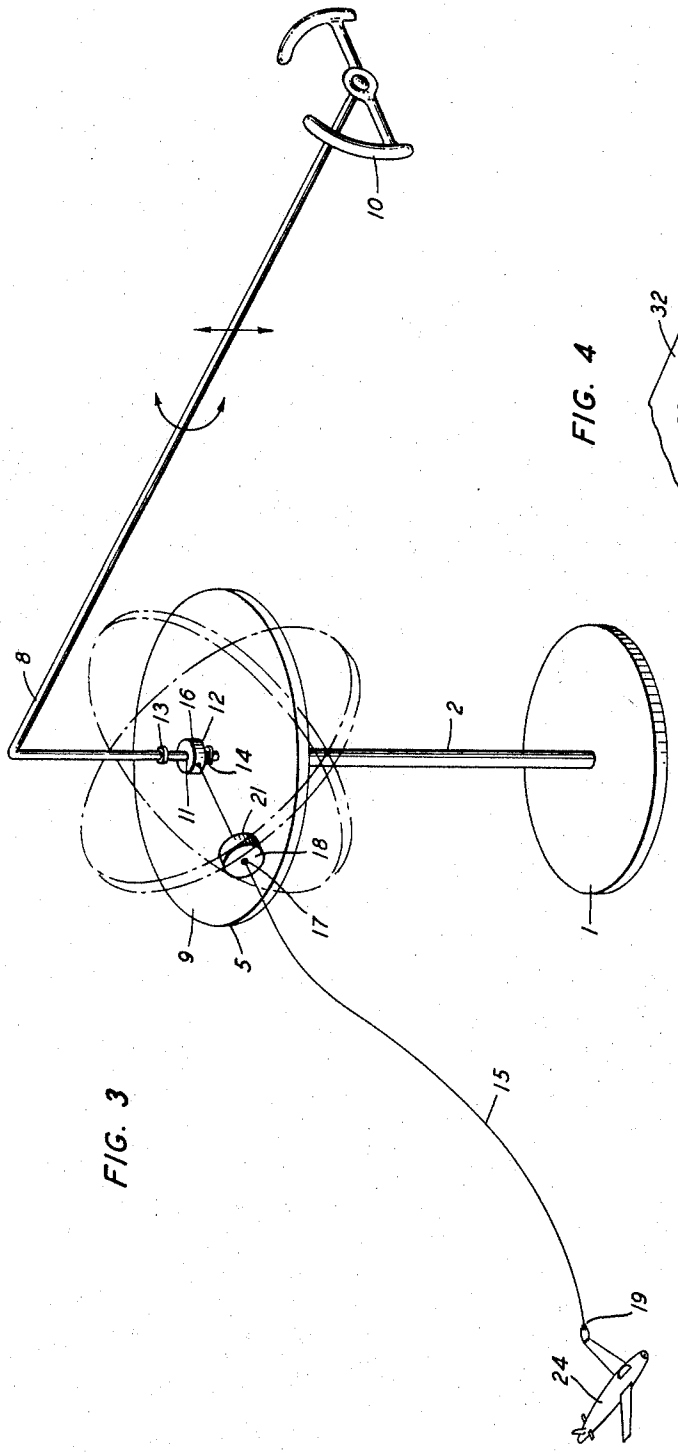


FIG. 3

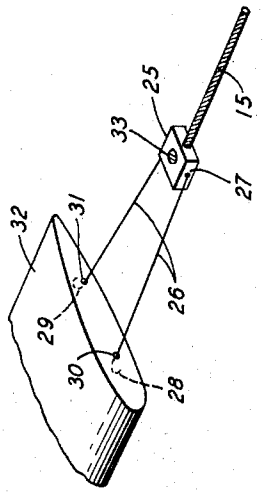


FIG. 4

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TOY APPARATUS WITH MANUALLY TILTABLE PLATFORM

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ABSTRACT OF THE DISCLOSURE

Toy apparatus is disclosed for manually operating a platform or track member to a plurality of tilted positions to control the traveling movement of toy racing cars and airplanes by gravity operated means. A weighted wheel and cable arrangement is used to cooperate with an upper platform surface for controllably moving the car and airplane circularly around the platform.

This invention relates to toy apparatus and particularly to mechanical facilities for controlling the tilting operations of a supporting platform to implement the traveling operations of toy vehicles.

A variety of devices are presently available for controlling the traveling operation of toy racing cars, airplanes and other such vehicles. Such devices often need a large number of delicate parts and, in many instances, are costly and complex in construction and operation. These factors tend to limit the widespread marketability and use of the control devices.

It is therefore an object of my invention to provide simple and economical facilities for controlling the traveling operations of toy vehicles.

Another object is to reduce the number of parts needed for such control facilities and particularly to provide durable structural elements.

These and other objects are attained in accordance with specific exemplary embodiments of my invention wherein simple and economical facilities are furnished for manually operating a platform, or track, member to a plurality of tilted positions to control the traveling movement of toy racing cars and airplanes by gravity operated means. In addition, the structural elements utilized for achieving the tilting operations and vehicle movements are durable and minimal in number.

Specifically, each illustrative embodiment of my invention comprises a circular base member which is suitable for placement on a floor and for supporting the other structural elements. A post member is centrally mounted on an upper surface of the base member and extends vertically upward therefrom. According to one feature of my invention, the upper end of the post member is attached to a swivel means which advantageously may comprise a spring element or ball joint device. The swivel means is pivotally affixed to an attaching body upon which a tiltable platform, or track, member is mounted by means of suitable fasteners. Advantageously, I provide a plurality of different platform members for mounting individually on the attaching body and for tiltable positioning to control the traveling movement of the toy vehicles.

In one exemplary embodiment of my invention, the last-mentioned platform member is oval in shape and includes a lower surface fastenable to the attaching body of the swivel mounting arrangement on the post member. An upper surface of the platform comprises a plurality of slotted tracks which are suitably spaced from each other for the traveling movement of toy racing cars around the tracks. Each of these racing cars comprises a plurality of strut members for slidably engaging the slotted tracks which direct the cars about the upper platform surface. A manually operable tilt control handle is secured via a coupling shaft to travel indicator apparatus which is affixed to a peripheral side of the platform for controlling the tilting action of the platform. The manipulation of the control handle enables a translation of the platform on its swivel mounting into a tilted position whereby the cars engaged with the slotted tracks travel towards a low part on the tilted, or included, track. Further circular tilting of the platform causes each car to continue its movement around the track.

Another illustrative embodiment of my invention advantageously comprises a circular platform member which has a lower surface mountable on the attaching body of the swivel mounting arrangement. A central point on the upper platform surface is secured to a first end of a L shaped coupling shaft which extends upwardly therefrom. A tilt control handle is affixed to the other end of the shaft for manipulation whereby the circular platform is tilted. A pair of retaining rings are positioned on the coupling shaft in vertical planes above the rest position of the platform to define the upper and lower excursion limits of a bearing device which is located intermediate thereto on the shaft and is rotatably attached thereabout. The bearing device is affixed to one end of a semiflexible cable, the other end of which is connected by means of an attaching device to a toy racing car or airplane.

In accordance with another aspect of my invention, a weighted wheel is used to cooperate on the upper platform surface for controllably moving the cable and hence the car or airplane around the circular platform. The wheel comprises an aperture through which the cable extends. It also has a peripheral, or circumference, surface which is ridable by gravity on the upper surface of the platform during the tilting thereof.

Accordingly, the tilt control handle can be manipulated for translating the circular platform on its swivel mounting to a plurality of tilted positions whereby the wheel is urged on the upper surface of the platform toward a low part thereof and concurrently it carries the cable along with it to operate the car or airplane in a desired path of travel. The structure of my invention enables the car or airplane to be motorless or motor-powered. More particularly, the structure enables a self propelled airplane to take-off, maneuver in flight and to land. A substantially rigid cable may replace the semiflexible cable to perform the same flight operations for a motorless airplane. In addition, the vehicles also may travel in circular paths when the circular platform is in its rest position and to deviate therefrom by effectively decreasing or increasing the distance between the central point on the upper platform surface and the extended end of the cable by the tilting action of the platform.

The foregoing and other objects, features and advantages of my invention will be more clearly understood from a reading of the following description of illustrative embodiments thereof with reference to the drawings in which:

FIG. 1 is a perspective view of the entire assembly comprising a tilt control means including a spring mem-

ber attached to a circular platform for controlling the paths of travel of a pair of toy racing cars coupled to the exemplary facilities of my invention by a semiflexible cable;

FIG. 2 is a plan view of tilt control apparatus with a ball joint mechanism for tilting a slotted track to control the travel of weighted cars about the slotted track segments;

FIG. 3 shows the assembly of FIG. 1 used for controlling the travel of an airplane instead of a car, and further displays the various tilting positions which the circular platform assumes under control of the tilt control means; and

FIG. 4 shows the apparatus utilized for fastening the semiflexible cable to the toy airplane of FIG. 3.

As shown in FIG. 1, the illustrative embodiment of my invention comprises a circular base member **1** having a post rod **2** mounted centrally thereon and extending vertically upward therefrom. A spring device **3** is cooperatively joined and associated with an upper end of post **2** and is affixed to an attaching body **4**. The latter is shown through a sectional view of a circular platform member **5** and is secured to a center point on the lower surface **6** of member **5** by means of suitable fasteners **7** projecting through apertures (not shown) in body **4**. Thus, platform **5** is spring mounted to the rod **2** for tilting movement.

An L shaped coupling shaft **8** is secured at one of its ends to a center point on a flat upper surface **9** of platform **5**. The other end of shaft **8** is attached to a tilt control handle **10** which is movable for cooperating with shaft **8** to tilt platform **5** from its rest position as defined by the body **4** and spring **3**. Shaft **8** extends vertically upward and horizontally outward from the center point of surface **9** so that a vehicle may travel without interference from the shaft **8** or the person operating the handle **10**.

The shaft **8** is of circular cross-section and extends through an aperture **11** in a bearing ring device **12** for enabling that device freely to rotate about shaft **8** during the travel of a vehicle. Device **12** is interposed on shaft **8** between upper and lower retaining elements **13** and **14** which are affixed on shaft **8** to limit the upward and downward movement of device **12** on shaft **8**. A semiflexible cable **15** is secured at one of its ends to a peripheral surface **16** of device **12**. Cable **15** is also extended through an orifice **17** in a circular weighted wheel **18** and its other end is fastened to a fastener means **19** associated with a toy racing car **20**. Wheel **18** is°13 so that its peripheral surface **21** rests by gravity on the upper surface **9** of platform **5** during the movement of car **20**.

A second racing car **22** is pivotally connected to the car **20** a suitable connecting rod **23** which extends through cooperating apertures (not shown) in the facing sides of the cars **20** and **22** and with the rod ends (not shown) comprising, for example, ball elements for the pivotal movement of the cars with respect to each other. This pivotal cooperation enables each one of the cars to pass the other one during the traveling movement.

In FIG. 1, racing cars **20** and **22** are depicted in a cooperating relationship with the cable **15** for movement in a desired path of travel on a floor surface under control of the tilt control facilities of my invention. FIG. 3 illustrates an airplane **24** instead of a racng car fastened to the cable **15** by means of the fastening means **19** for the captive flying of that airplane. Referring to FIG. 4, the fastening means **19** is shown comprising an attaching block **25** secured to the cable **15**. A control wire **26** is extended through an apertured segment **27** of block **25** and spring clip end members **28** and **29** of the wire **26** extend into apertures **30** and **31**, respectively, in a wing **32** of the airplane **24** for fastening the cable **15** to that airplane. The block **25** is locked at a prescribed position along the length of wire **26** by a set screw arrangement **33** in block **25**. A racing car, such as car **20** of

FIG. 1, is fastened to cable **15** with fastener means **19** by inserting the spring clip end members **28** and **29** into cooperating apertures (not shown) in the facing sde of the car body.

Turning now to the operation of the exemplary embodiment of my invention as set forth in FIG. 1, the movement of the tilt control handle **10** enables the coupling shaft **8** to translate the circular platform **5** into a tilted position on its mounting comprisng body **4** and spring **3** for urging the upper surface **9** of platform **5** against the peripheral surface **21** of the weighted wheel **18**, whereby wheel **18** commences to rotate by gravity on the surface **9**. The rotation of wheel **18** causes its wall associated with and defining the orifice **17** to move the semiflexible cable **15**. The latter cable is secured at one end to the bearing device **12** and therefore moves circularly about the central point of the surface **9** as the device **12** rotates on the coupling shaft **8**. The movement of cable **15** effects the driving of the wheeled racing cars **20** and **22** in a path on the floor surface **34**. Wheel **18** thereafter continues to rotate on the upper surface **9** for moving the cars **20** and **22** as long as the surface **9** is inclined under control of the handle **10**, shaft **8** and spring **3**.

Cars **20** and **22** may travel in a circular path as illustrated in FIG. 1 when the surface **9** is in a horizontal plane. The tilting of the platform **5** under control of handle **10**, shaft **8** and spring **3** enables the cars **20** and **22** to travel about the depicted circular path by effectively reducing or increasing the straightness of cable **15**. In addition, the cars **20** and **22** may advantageously be driven either solely under control of the apparatus of FIG. 1 or with the aid of suitable motor means (not shown) cooperating with the car wheels.

FIG. 3 depicts various tilted positions into which the platform **5** may be urged under control of handle **10**, shaft **8** and spring **3**. It also shows that an airplane **24**, instead of a car, may be propelled by the movement of the cable **15**, as previously explained. In accordance with the illustrative structure of my invention, cable **15** may may be made of a substantially nonflexible material for the flying operations of a motorless airplane **24**. Such an arrangement enables the exemplary apparatus of FIG. 3 to be operated under control of handle **10** for take-off, flight maneuvering and landing operations of airplane **24**. The apparatus of FIG. 3 functions to control the movement of cable **15** for the aforementioned airplane operations in basically the same manner as previously explained with respect to the cars **20** and **22**. The airplane **24** may also be self propelled under control of a suitable airplane motor means (not shown) and the apparatus of FIG. 3 may advantageously be used to control the path of flight over either a semi or nonflexible cable **15**.

FIG. 2 shows another illustrative embodiment of my invention comprising an oval platform **35** having an upper surface **36** with a pair of slotted tracks, or guides, **37** and **38** suitably spaced from each other for directing the movement of a pair of weighted cars **20***a* and **22***a* on the surface **36**. Each of the cars **20***a* and **22***a* is equipped with a pair of struts **39** and **40** which slidably interfit with the associated track **37** or **38** for the direction of the car around the track. A lower surface **41** of platform **35** is centrally mounted upon an attaching member **42** by means of fasteners **7***a*. The member **42** is also swivelly joined to a ball joint device **43** for the tilting movement of the platform **35**. The ball joint device is cooperatively secured on an upper end of a post rod **2***a*, the lower end of which is affixed centrally on a circular base member **1***a*.

A control indicator apparatus **44** is secured to a peripheral side member **45** of platform **35**. The apparatus **44** includes a marked scale **46** with speedometer type graduations together with a cooperating weighted pendulum indicator **47** which provides suitable speed indications for the cars **20***a* and **22***a* during their movement on platform **35** due to the latter's tilted action. A tilt control handle **48** is secured to a coupling shaft **49** affixed to the indicator apparatus **44** for controlling the tilting

of platform **35**. In addition, a mask member **50** is mounted about the shaft **49** for masking of the pendulum indicator **47**.

After the cars **20***a* and **22***a* have been placed upon platform **35** and the struts **39** and **40** have slidably engaged the respective track slots **37** and **38**, the cars can be driven about the tracks. Such driving occurs by gravity and the cars move toward the lowest point of the inclined, or tilted, platform **35** when the latter is tilted under a control movement of the tilt handle **48** and shaft **49**, which movement urges platform **35** to a tilted position on its mounting body **42** and swivel ball joint device **43**. The cars **20***a* and **22***a* continue to move around the tracks **37** and **38** as long as they have momentum or the platform **35** provides an incline with a low part in the direction of the car movement.

According to my invention, the mounting arrangement for the platforms **5** and **35** may advantageously comprise the spring **3** or the ball joint device **43** configuration for the tilt functions. In addition, the slotted track platform **35** or the circular platform **5** with its associated tilt control facilities may suitably and facilely be interchanged and individually mounted upon the support structure comprising the attaching body **4**, spring **3**, post **2** and base member **1**.

It is to be understood that the hereinbefore described arrangements are illustrative of the application of principles of my invention. In light of this teaching, it is apparent that numerous other arrangements may be devised by those skilled in the art without departing from the spirit and scope of the invention.

What is claimed is:

1. A toy apparatus comprising

a base support member,

a post element mounted upon said member and extending vertically upward therefrom,

a platform device having upper and lower surfaces,

swivel means pivotally attached to said lower surface of said device and secured to an upper section of said element,

a swivel control means operable for urging said platform on said swivel means to a plurality of tilted positions,

a movable toy element,

means cooperating with said upper surface of said platform device and responsive to the operation of said swivel control means for moving said toy element about said platform device,

said upper surface of said platform device including at least one slotted track member defining a guiding track,

said movable toy element including a vehicle having wheels rotatable on said upper platform surface and at least one device for slidably engaging said slotted track member, whereby said vehicle is responsive to the tilting of said platform under control of said swivel control means for rotating said wheels on said upper platform surface thus to move said vehicle in a path defined by said engaging device sliding within said slotted track member, said platform device including a peripheral side surface,

further comprising control indicator means secured to said peripheral side surface, said indicator means having a scale member with marked segments thereon and a weighted pendulum indicator cooperatively associated with said marked scale member,

and wherein said swivel control means includes a tilt control handle and a coupling shaft having one end thereof secured to said indicator means and another end thereof secured to said handle, and said handle and shaft being operable for translating said platform device into said plurality of tilted positions.

2. A toy apparatus comprising

a base support member,

a post support element mounted upon said member and extending vertically upward therefrom,

a platform device having upper and lower surfaces,

swivel means pivotally attached to said lower surface of said platform device and secured on an upper section of said post element,

a swivel control means operable for urging said platform on said swilvel means to a plurality of tilted positions,

a movable toy element,

and means cooperating with said upper surface of said platform device and responsive to the operation of said swivel control means for moving said toy element about said platform device,

said moving device including

a shaft member centrally mounted on said upper surface of said platform device,

a bearing device rotatably mounted on said shaft member,

a weighted wheel element having a wall member defining an aperture and a circumferential surface for movement on said upper surface of said platform device,

cable means extending through said aperture defined by said wall member and having one cable end secured to said bearing device and the other cable end secured to said movable toy element,

and said wheel element being responsive to the tilting of said platform device for movably urging said cable on said aperture wall member for rotating said bearing device on said shaft member and moving said toy element about said platform device.

3. A toy apparatus in accordance with claim **2**

wherein said swivel control means comprises a handle device,

and wherein said shaft member is part of said swivel control means and is an angular shaped element having a first end thereof secured centrally on said upper platform surface and extending vertically upward therefrom with a second shaft end being connected to said handle device, said handle device and said shaft member being movable for translating said platform device on said swivel means into said plurality of tilted positions,

and further comprising upper and lower retaining elements mounted on said shaft member above and below said mounted bearing device for limiting the upper and lower movement of said bearing device on said shaft member.

4. A toy apparatus in accordance with claim **3** further comprising

fastening means including an attaching block secured to said other end of said cable and having a member with an apertured segment,

and linking means extending through said apertured segment for pivotally linking said attaching block to said toy element.

5. A toy apparatus in accordance with claim **4**

wherein said toy element comprises an airplane device having a wing member with apertured means pivotally secured to said linking means,

and wherein said cable means is rigid for enabling said airplane device to take-off, maneuver in flight and land in response to the tilting of said platform device and the cooperation between said weighted wheel element, said upper platform surface and said cable means.

6. A toy apparatus in accordance with claim **4** whereing said toy element comprises

a pair of wheeled vehicles each having a body structure,

a first one of said vehicles including apertured means pivotally securing said vehicle body to said linking means,

a pivotal connecting rod,

and means pivotally mounting said connecting rod between said pair of wheeled vehicles for enabling

each one of said pair of vehicles to pass the other one of said pair of vehicles during the movement of said vehicles about said platform device in response to the tilting of said platform device and the cooperation between said weighted wheel element, said upper platform surface and said cable means.

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