Abstract

A wheel spinner for mounting on a rim of a vehicle wheel and enhance ornamental features of a tire. Direct current motors cause rotation of the spinner independently from rotation of the tires. A user operates a remote control for sending a message to the drive motors to regulate the speed and direction of rotation of the spinner independently from the tire rotation. A cover plate secures the spinner to the rim of the vehicle wheel.
Program Start

Set Initial Values: Speed = 0

Handle Radio

Recv. Msg? Yes

Update Speed Value

Send Battery Voltage with Reply

No

Control Motor

FIG. 9
Task Start

Connect Request?
Yes

Establish Connection

Connected?
Yes

Recv. Msg.?
Yes

Update Control Parameters

Send Reply with Status Data

FIG. 10
Host Tasks
Wheel Communications

Task Start

Wheel Address = 1

Yes

No

All Done?

Send Speed & Direction Msg

Next Wheel Address

timeout?

Yes

Show no Comm.

No

Recv. Msg.? 

Yes

Update Data

No

FIG. 11
Host Tasks
GPS Communications

Task Start

Recv. Data?

Yes

Parse Data

GPS Lock?

Yes

Store Position and Speed

No

FIG. 12
WHEEL SPINNER ASSEMBLY

[0001] This application is a continuation-in-part of PCT application no. US2004/029221 filed on Sep. 8, 2004 and a continuation-in-part of U.S. application Ser. No. 10/657,396 filed on Sep. 8, 2003, both of which are incorporated by reference herein in their entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Technical Field

[0003] This invention relates to automotive wheel covers, and more particularly to a wheel cover provided with a spinner assembly that is capable of rotating at speed and in a direction different from the rotating wheel.

[0004] 2. Background Art

[0005] Wheel covers and outer surfaces of the wheel are used for providing additional ornamentation to an automobile. For instance, many car wheels are provided with decorative nuts that may have a particular color or lighting capabilities to enhance the ornamental features. The nuts may have a contrasting color or illumination, which is highly visible against the background of an otherwise dark wheel assembly.

[0006] Many automobile enthusiasts mount special wheel cover assemblies that have weights imprinted thereon or special graphics to distinguish the car and attract attention to the advertising. Other known devices use an air current for stabilizing the display portion of the disk of the wheel cover to retain the disk stationary and to allow the display of graphics on the disk. Still others provide illumination assemblies that are mounted on the side of the wheels to enhance the aesthetic effect of a rotating tire and make it highly visible during nighttime. Still other modifications include the use of decorative attachments for the tire rims that are painted with reflective paint to enhance visibility of the automobile and provide an additional ornamental feature to the vehicle.

[0007] Most of the known devices are attached to the wheel to rotate at the same speed as the wheel while enhancing the decorative features of the wheel. The present invention contemplates provision of a wheel spinner assembly that is adapted for mounting on a conventional tire rim and is adapted for rotation at speeds and directions of rotation different from the speed and direction of rotation of the vehicle wheel.

BRIEF DESCRIPTION OF THE INVENTION

[0008] One embodiment of the spinner assembly comprises an ornamental spinner member having a central hub that receives a bearing assembly to facilitate rotation of the spinner member. A ring gear may be attached to the spinner member. The spinner member may be attached to a cover plate, which is attached to a rim. The spinner assembly may further include drive motors. The drive motors are direct current motors powered by a battery pack and controlled by a remote transmitter. Each drive motor has a pinion for engaging the ring gear. In operation, the drive motor causes the pinion to rotate which, in return, causes the ring gear to rotate. This rotation results in the rotation of the spinner member. A microprocessor operationally connected to the drive motors allows a user to selectively modify the speed and direction of rotation of each spinner assembly. The drive motors and the battery pack are mounted on each wheel of a vehicle.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Reference will not be made to the drawings, wherein like parts are designated by like numerals.

[0010] FIG. 1 is the cross-sectional view of the spinner assembly secured on a rim of a conventional wheel.

[0011] FIG. 2 is an exploded view of the spinner assembly adapted for securing on a conventional rim of a tire.

[0012] FIG. 3 is a schematic view illustrating remote control assembly for controlling operation of drive motors.

[0013] FIG. 4 is a view of an alternate embodiment of the spinner assembly.

[0014] FIG. 5 is an enlarged view of the spinner assembly see in FIG. 4.

[0015] FIG. 6 is a view of the underside of the spinner assembly and cover plate.

[0016] FIG. 7 is a view of a shaft.

[0017] FIG. 8 is a schematic diagram of the system layout.

[0018] FIG. 9 is a flow chart of the program logic controlling spinner rotation.

[0019] FIG. 10 is a flow chart of operator interface communications.

[0020] FIG. 11 is a flow chart of communications between a main controller and individual wheel controllers.

[0021] FIG. 12 is a flow chart of GPS communications.

[0022] FIG. 13 is a flow chart of main control task.

DETAILED WRITTEN DESCRIPTION

[0023] Although several specific embodiments of the present invention will be described herein, it will be understood that the intention is not to limit the invention to the particular embodiments described. On the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

[0024] Turning now to FIG. 2, numeral 10 designates the wheel spinner assembly in accordance with the present invention. As shown in the drawing, the wheel spinner assembly 10 is adapted for mounting onto a rim 12 of a wheel (not shown) of a car or truck. The spinner assembly 10 comprises an ornamental spinner member 14 that has a plurality of spokes 16 radially extending from a central hub 18. The shape and size of the spokes may differ. In other embodiments of the invention, the style, shape, size, design, color, and type of finish of ornamental spinner member 14 may differ.

[0025] The spinner member 14 illustrated in FIG. 2 has each spoke of a generally segmental shape, with linear dimensions of the outer edge of the spoke being greater than the linear dimension of the inner portion of the spoke. The spokes 16 may be formed from cast aluminum, polished and
chrome plated, if desired. Other embodiments of the invention may use a material other than cast aluminum to construct the spinner member 14. A plurality of step-up ridges 26 may be formed on each of the spokes 16 to enhance the visual attractiveness of the spinner assembly 10. The spokes 16 are unitary formed with the central hub 18. The central hub 18 includes an outer rim 20, an inner extension 22, a central opening 24, and an attachment lip 21.

A spinner bearing assembly 30 is adapted for positioning in the central hub 18 to extend in the central opening 24. The bearing assembly 30 comprises angular contact bearings that have sufficient sealing and lubrication to provide free rotation of the spinner member 14 independent of the rim 12. In one embodiment of the invention, the bearing assembly 30 will have one or more grease input points for the injection of grease or other lubricant. An enlarged diameter flange 32 of the bearing assembly 30 allows engagement by lugs or screws 34 for securing of the bearing assembly 30 to attachment lip 21 of central hub 18.

As illustrated in FIGS. 1 and 2, cap 36 is provided for securing the spinner member to the rim 12. The cap 36 is a fixed element that rotates with the rim 12, at the same speed as the rim 12. A post 38 of the cap 36 extends through the bearing assembly 30 and central opening 24 for attachment to cover plate 42 using lug washer 86 and castle nut 84. Although cap 36 is a fixed element that rotates with the rotation of the rim 12, bearing assembly 30 permits the free rotation of spinner member 14 independent of cap 36 and rim 12. Due to inertia obtained by the rotating spinner member 14 while the vehicle is moving and the low friction of bearing assembly 30, spinner member 14 may continue to rotate even after the vehicle has stopped (although the connection to the motors discussed below may dampen free rotation).

It should be obvious to persons of ordinary skill in the art that there are other possible configurations for attaching the spinner member 14 to the rim 12 and those configurations are intended to be encompassed by the present invention. For instance, one embodiment of the invention that is not shown may use a shaft 100, as illustrated in FIG. 7, in place of cap 36 and post 38 for attaching the spinner member 14 to rim 12. The shaft 100 has a threaded first end 101 for engaging a conventional nut, and a threaded second end 102 for engaging the threads of center hole 43 of cover plate 42. The second end 102 terminates into a larger diameter flange 103. In assembling the spinner member 14 to the cover plate 42, the first end 101 of the shaft 100 is inserted into center hole 43 from the underside of cover plate 42 which is the side of cover plate 42 facing rim 12. The second end 102 of the shaft 100 will threadedly engage the threads of center hole 43 up to a point where the flange 103 of the shaft 100 prevents further advancement through center hole 43. Like post 38, the shaft 100 extends through the central opening 24 and bearing assembly 30 permitting the threads of the first end 101 of the shaft 100 to protrude from the bearing assembly 30. A nut is then threaded onto the first end of the shaft 100. A cap (not shown), much like cap 36 without post 38, may be used to cover the nut. The cap may be secured to the outer rim 20 of spinner member 14 using conventional bolts.

Mounted between the spinner member 14 and the rim 12 is a ring gear 40, which fits over the inner portion 22 of the spinner assembly 10. The outer perimeter of ring gear 40 has teeth 49 designed to engage the teeth of one or more pinions 52. A cover plate 42 is mounted between the ring gear 40 and the rim 12. In the embodiment, illustrated in FIGS. 1, 2, 4 and 5, ring gear 40 is attached using conventional attachment means to the outer perimeter of the inner extension 22 near the point where inner extension 22 comes closest to cover plate 42. In an alternative embodiment of the invention that is not shown, ring gear 40 encircles inner portion 22 and is fixedly attached to theunderside of spinner member 14 using conventional attachment means such as bolts or screws. As illustrated in FIG. 5 one embodiment of the invention may include protector plate 48. Protector plate 48 partially encloses pinion 52 between cover plate 42 and ring gear 40, and thus helps prevent dirt, grit, and gravel from contacting pinion 52. In one embodiment of the invention, as illustrated in FIGS. 1 and 2, a spacer 44 may be provided between the ring gear 40 and the cover plate 42. Spacer 44 prevents spinner assembly 10 and cover plate 42 from coming into direct contact with one another. As a result, spinner member 14 is able to rotate independently of cover plate 42 with minimal rotational friction.

Returning to FIG. 2, the cover plate 42 is flat circular member formed with a plurality of through openings 45, each sized and shaped to receive a cap screw 46 therethrough. The cap screws 46 secure the cover plate 42 to the rim 12. Cover plate 42 also includes a center hole 43 therethrough. As mentioned earlier, in one embodiment of the invention center hole 43 is threaded on its inner circumference. The cover plate 42 may be a modified conventional cover plate or wheel replacement cover plate specifically adapted for use with the spinner assembly 10.

Cover plate 42 covers chamber 47. Chamber 47 houses the lug nuts 82 which attach rim 12 to the wheel of a vehicle. The dimensions of chamber 47 will vary depending on the style and design of rim 12. In some embodiments, chamber 47 will need to be altered to accommodate room for electronics box 35 shown on FIGS. 4-6, battery pack 60 and motors 50. An electronics box 35 contains a spinner microprocessor as will be discussed below. The electronic box 35 is designed to protect the spinner microprocessor from the outside elements such as moisture and dust. Chamber 47 may be altered by machining or boring out additional space. Other rims may have a chamber 47 which can accommodate the aforementioned components without needed alteration. The tire rim 12 is provided with conventional brake rotor 80, and a plurality of lug nuts 82.

As shown in FIG. 2, a plurality of direct current motors 50 are positioned in chamber 47 between the rim 12 and the cover plate 42. The motors 50 control rotation of the spinner member 14 at the speed selected by the user, as will be explained in more detail hereinafter. Although a plurality of motors 50 are illustrated in FIG. 2, some embodiments of the invention may only use one motor 50 in connection with wheel spinner assembly 10 as illustrated in FIGS. 4-6. Turning now to FIG. 5, each motor 50 is provided with a suitable pinion 52 for driving the ring gear 40. The drive pinions 52 extend through openings 54 formed in the cover plate 42 and contact the ring gear 40. The teeth on pinions 52 engage the teeth on ring gear 40. FIG. 5 illustrates the engagement of pinion 52 with ring gear 40. In operation, the rotation from the motor 50 is transmitted through the pinion 52, ring gear 40, and then to the spinner member 14 causing
its rotation independent of the rim 12. Other embodiments of the invention may use motors, other than direct current motors, which are suitable for rotating spinner assembly 10.

[0033] A battery pack 60 shown in FIG. 3 provides power to the motors 50. In one embodiment of the invention, the battery packs 60 are arranged around the perimeter of the underside of cover plate 42 as illustrated in FIG. 6. In the embodiment of the invention illustrated in FIG. 1, the battery packs 60 are positioned on the inside of rim 12.

[0034] Returning now to FIG. 3, one embodiment of the present invention illustrates the motors 50 connected to a receiver 62, which is operationally connected through a driver 64 to each motor 50. Driver 64 will also be referred to herein as spinner microprocessor. The two terms are intended to have the same meaning and are used interchangeably. The receiver 62 receives signals from a handheld remote transmitter 66 which has three control buttons: a control button 70 directing the spinner assembly to rotate in the direction reverse from the direction of the wheel; a control button 72 sending a signal to cause the spinner member 14 to rotate in the same direction as the wheel; and a speed control knob 74, which controls the speed of rotational force transmitted from the motors 50 to the spinner member 14. Receiver 62 is but one type of operator interface. Other types of operator interfaces are discussed in detail below.

[0035] Since in the embodiments shown, each wheel has an independent battery pack 60 and independent motor driver 64 controlling operation of the direct current motors 50, the user may accelerate the speed of rotation of the spinner member 14, or decrease the speed of rotation of the spinner so that even after the automobile has stopped and/or is turned off, the spinner member 14 continues its rotation powered by the battery 60 and driven by the motors 50.

[0036] One embodiment of the invention will have an accessible means for charging the battery pack 60 by an external source such as ordinary electrical outlet. Accessible means may include a receptacle located on rim 12 that is connected to a circuit for the inflow of electrical current to the battery pack 60, and permits engagement with an external power source. Other embodiments may use alternative energy sources to provide a charge to the battery pack 60 such as wind or solar power. For example, there may be one or more turbines located on or about the vehicle which rotate from the force of passing air when the vehicle is in motion. The spinning motion of the turbines may be used to generate an electrical current with the use of magnets and conductive wire such as an armature. The energy created from the moving turbines would either be used to recharge battery pack 60, or in the alternative, be used to power motor 50 directly. Solar power may be provided by placing solar panels on or about the vehicle and providing a circuit for the flow of current to the battery pack 60 or directly to motor 50.

[0037] One embodiment of the invention is powered by an electrical slip ring which is a commercially available device used to provide a rotating interface to transmit power across a rotating connection. Other embodiments of the invention may use the rotation of the wheels of the vehicles or the spinner members 14 to generate current using magnetic fields and conductive wires such as well known armature arrangements. One embodiment of the invention may be powered using magneto power which is similar to the type used on small four-stroke engines. In that embodiment, a magnet is mounted to the rim 12 with an electrical coil installed in the spinner member 14 itself. When the wheel rotates or the spinner member 14 rotates, the magnet mounted on rim 12 passes in close proximity to the electrical coil mounted on spinner member 14 causing a voltage to be produced which could at least partially recharge the batteries or supply power for other uses. The electrical coil is operationally connected to battery pack 60 to help recharge battery pack 60. Another embodiment of the invention will have the motors 50 powered by the vehicle battery. Another embodiment of the invention may create movement of spinner member 14 using pneumatic power wherein a small compressor is located on or about the vehicle. Other embodiments of the invention may create movement of spinner member 14 using hydraulic power, i.e. using the power steering pump. Another embodiment of the invention may create movement of spinner member 14 using various arrangements of magnets.

[0038] FIG. 8 illustrates a schematic diagram of an overall system for controlling the function of the wheel spinner assemblies 10. The overall system consists of an operator interface and a series of controllers or microprocessors. In the illustrated embodiment, the operator interface is a handheld operating device such as Personal Digital Assistant (“PDA”) or an iPAQ. A main microprocessor, also referred as the host microprocessor, is positioned somewhere in or about the vehicle. In addition to the host microprocessor, each wheel spinner assembly is controlled by a separate microprocessor, also referred as spinner microprocessors.

[0039] The operator interface is used to monitor certain data pertaining to the wheel spinner assemblies 10 and to remotely control functions of the wheel spinner assemblies 10 including the speed and directional rotation of the spinner members 14. The operator interface may also be used to control other outputs associated with the wheel spinner assemblies 10 including without limitation lights, whistles, LCD monitors, and speakers. The basic communication path for controlling the function of the wheel spinner members 14 is as follows: operator interface communicates with the host microprocessor which, in turn, communicates with the spinner microprocessors. The direction of communication is two-way, meaning the operator interface can both retrieve data from the host and spinner microprocessors, as well as send data to the host and spinner microprocessors.

[0040] FIG. 10 illustrates the basic communication process between the operator interface and the host microprocessor in one embodiment. As illustrated, a connection is first established between the operator interface and the host microprocessor in one embodiment. In one embodiment, the connection between the operator interface and the host microprocessor is via a Wireless Fidelity network; however, any networking means capable of sending and receiving data between the operating interface and the host microprocessor may be used. Once the connection is established, the host microprocessor updates the monitored parameters. Monitored parameters may include any output or input monitored by the host microprocessor. In one embodiment of the invention, the monitored parameters include vehicle speed, battery charge, presence or absence of an external charger and rotational direction of spinner members 14. After the monitored parameters have been updated, the host microproces-
sor sends a reply with updated status of the monitored parameters to the operating interface.

[0041] FIG. 11 illustrates the basic communication process between the host microprocessor and the spinner microprocessors. The host microprocessor is combined with a radio for sending and receiving data, and acts as the central controller for communicating with the spinner members 14. Recall that in the embodiment of FIG. 8, each wheel spinner assembly 10 has its own spinner microprocessor. Like the host microprocessor, each spinner microprocessor also is combined with a radio for sending and receiving data. In the embodiment illustrated in FIG. 11, the host microprocessor first sends a message to the radio of the particular spinner microprocessor designated the first spinner microprocessor. In the case of the illustrated embodiment, the message being sent by the host microprocessor pertains to the speed and directional rotation of the wheel spinner member 14. If no communication is established between the radio of the host microprocessor and the radio of the intended spinner microprocessor recipient, the communication attempt is timed out, and the message is directed to the next spinner microprocessor. If communication is established between the radio of the host microprocessor and the radio of a spinner microprocessor, but no message is received, the message is resent to the spinner microprocessor. If the message is successfully received by the radio of a spinner microprocessor, the spinner microprocessor updates its parameters in accordance with the information received in the message from the host microprocessor. The process is repeated for each wheel until all spinner microprocessors have updated information.

[0042] FIG. 9 illustrates the program logic for controlling spinner rotation. The spinner microprocessors when first activated have initial parameters. As illustrated, the initial parameters will generally be set at zero to prevent the spinner members 14 from immediately rotating when the system is first activated. When the spinner microprocessor receives a message from the host microprocessor via its radio receiver, the spinner microprocessor updates its parameters in accordance with the message received. For instance, the host microprocessor may send a message to the spinner microprocessor requesting that the speed of the spinner member 14 be adjusted to “x”, wherein “x” is a speed value. The spinner microprocessor will then send a reply message to the host microprocessor confirming that it received the message from the host microprocessor. As illustrated, the reply for some embodiments may also include diagnostic information such as battery voltage. The spinner microprocessor will then control motor 50 to update the speed of spinner member 14 to “x”. The spinner microprocessor is constantly controlling the motor 50 to rotate at the last inputted speed and directional values. As a result, even if a message from the host microprocessor sent, but not received by the spinner microprocessor, the spinner microprocessor will still controlling motor 50 in accordance with the last received message. If the message is not received by the spinner microprocessor, the message is resent.

[0043] FIG. 13 illustrates the ability of the host microprocessor to perform multiple tasks. For instance, in the embodiment illustrated, the host microprocessor first receives control inputs (e.g., rotational speed of spinner members 14) received from an operator using an operator interface. Before delivering an executable message to the spinner microprocessors, the host microprocessor confirms with the spinner microprocessors that the battery packs 60 used to power motors 50 are not charging. As illustrated in FIG. 8, one embodiment of the invention may have a charge controller which is a sensor used with embodiments that are recharged by an external power source that provides feedback to the host microprocessor via the spinner microprocessor of whether the respective wheel is plugged up to an external power source.

[0044] If the host microprocessor receives a message from the spinner microprocessors indicating the wheels are charging, the host microprocessor can be configured to send a message to disable both the vehicle starter and motors 50. This is to prevent an operator of the vehicle from driving the vehicle while still plugged into an external power source such as a wall outlet. If the battery pack 60 is not charging, the host microprocessor can enable the vehicle starter, compute the current speed and direction of the wheels once the vehicle begins moving (assuming spinner speed is to be based on wheel speed), and send a message to the spinner microprocessors to set motors 50 speed, direction, or other requested output. As indicated by the “shutdown” box (FIG. 13), some embodiments of the invention may have manual override capability. For instance, a shutdown button may be positioned on the operator interface or on or about the car which automatically shuts off the spinner member or members if needed. Another embodiment of the invention may include sensors for detecting the air pressure of tires.

[0045] Altering the speed and rotational direction of spinner members 14 relative to the speed and rotational direction of each spinner’s 14 respective wheel creates different visual effects. Once the speed at which the vehicle is traveling is known, the microprocessor and/or the host microprocessor can be programmed to calculate the rotational speed of the wheels. As illustrated in FIG. 8, the host microprocessor is combined with a Global Positioning System (“GPS”) receiver. The GPS receiver, among other ordinary functions, provides data regarding the speed and location of a vehicle. FIG. 12 illustrates the communication process between the GPS receiver and the host microprocessor. As data is received by the GPS receiver, the data is inputted to the host microprocessor. The host microprocessor then parses the received data from the GPS receiver for only data relevant to a monitored parameter, i.e. vehicle speed in this example. Once the host microprocessor confirms the GPS receiver has locked onto the requisite number of satellites, the data is stored by the host microprocessor. The information is then used to regulate the speed and rotation of spinner members 14. For instance, the host microprocessor and spinner microprocessors can be programmed to communicate at regular intervals to verify vehicle’s current traveling speed, and to adjust spinner member speed if necessary to maintain at a constant spinner speed above or below the wheel speed.

[0046] The spinner member 14 may be directed to remain stationary or to rotate after the vehicle has stopped. In one embodiment, the host microprocessor may instruct spinner microprocessors to operate independently of one another. As a result, one or all wheel spinner members 14 may be commanded to perform different functions simultaneously. For instance, the front spinner members 14 may be directed to turn clockwise, while the rear spinners may be directed to turn counterclockwise. Also, each spinner member 14 may be directed to rotate at a different speed from the other spinner members 14. Further, the spinner members 14 may...
be controlled to rotate at a speed and direction opposite to the rotation of the wheels of a moving vehicle. It is also possible to provide the effect of a motionless spinner member 14 on a moving car. Counter rotation of the spinner member 14, if performed at the proper speed, may give the appearance that the spinner is not moving.

[0047] It is envisioned that rotational speed of the spinner member 14 may be timed with square wave output from the anti-lock brake system (“ABS”) of the wheel speed sensor. Newer cars with ABS brakes use a wheel speed sensor built into the wheel bearings of the car. This sensor may be used to get the vehicle speed and use it to time the spinner movement. Signal is a square wave output typically fed into the originally equipped computer system in the car. A connector designed to read the data would transmit it to the operator interface and based on input from the user, output a command for the spinners.

[0048] The “Aux Input/Output” box illustrated in FIG. 8 represents a number of optional functions that may be controlled or monitored by spinner microprocessors. The spinner microprocessors may be programmed to control any output or input. Outputs include without limitation LCD screens, whistles, speakers, and lights. One embodiment of the invention will include LCD screens on the spinner members 14 as a controlled output. The LCD screen will be able to show pictures and different colors. The LCD screen may be powered by battery pack 60, or some other available source of power such as described above. The spinner microprocessor will be programmed to control the LCD screen and the user will be able to operate the LCD screen using the operator interface.

[0049] Another embodiment of the invention will have speakers incorporated into the spinner members 14. The speakers will be controlled by the spinner microprocessor and will be able to play tunes via a direct connection or a wireless connection. The speakers will be powered by the battery pack 60 or other available source of power. In one embodiment of the invention the speakers will produce about 90 decibels.

[0050] Another embodiment of the invention will have whistles on the spinner members 14. The whistles will produce noise. In one embodiment, the whistle is controlled by the spinner microprocessors and is powered by a power source such as battery pack 60, or other available source of power. In one embodiment of the invention, the whistles are attached to the extreme outer edges of the spinner member 14, and when spinner member 14 spins, air is pushed through the whistle and creates a sound of varying pitch based on the speed of the spinner.

[0051] As mentioned earlier, one embodiment of the invention may have lights as a controlled output. It is envisioned that an illumination assembly may be provided for illuminating the outside of a spinner member 14, while being connected to battery pack 60. The lights will be positioned on the spinner member 14 and will be controlled by the spinner microprocessor. The lights may also be powered by other available sources of power such as those discussed earlier. The lights may be configured in any design on the spinner member 14 and can be controlled via the spinner microprocessor to do several ornate functions such as blinking, fading on and off, and coming on and off in a series. In another embodiment of the invention the lights will be different colors. In one embodiment of the invention, the lights are modulated to flash in time with the speed of the vehicle, e.g. as the speed of the vehicle increases, the timed intervals between flashes become shorter. The spinner microprocessor may also be programmed to turn the lights on when the security system is activated on the vehicle. The lights may also be programmed to come on and off to the beat of music similar to lights on an equalizer. In one embodiment of the invention, the lights on spinner member 14 are powered by battery pack 60 via an electrical slip ring or a magneto type interface.

[0052] In the alternative, the light assembly may be mounted directly on rim 12 and powered by the battery pack 60 or other available means of power. Fixedly attaching the lights to the rim prevents rotation of the lights when the vehicle is not in motion, and permits the spinners to be rotated against a lighted background.

[0053] It is further envisioned that the motorized spinners may be connected to operate in conjunction with the car security system in an attempt to draw attention to the vehicle in the event of vandalism or attempted theft. In one embodiment of the invention, the operator interface can either receive a signal from a vehicle’s existing security system, or function as the security system in combination with wireless sensors positioned on or about the vehicle. When the sensors are triggered, the spinner members 14 may be preprogrammed to give a certain response such as rotate. In one embodiment of the invention, the sensors send a wireless message to the operator interface which in turn sends a wireless message to a user’s cell phone or pager. It is further envisioned that a full time brushed connection for direct power application to each wheel may be provided.

[0054] Appendix 1 contains a list of parts used in one embodiment of the invention. The attached list is not an exhaustive list of all parts used in connection with the present invention. In addition, the invention is not limited to the parts listed in Appendix 1. Other suitable parts may be used in lieu of any of the parts listed in Appendix 1.

[0055] Alternate embodiments of the wheel spinner assembly described above may further comprise:

[0056] i) a GPS receiver connected to the host microprocessor;

[0057] ii) the spinner member connected to a rim;

[0058] iii) the spinner microprocessor, the power source, and the motor positioned in a chamber of said rim;

[0059] iv) the spinner member connected to a cover plate;

[0060] v) the spinner member further comprising at least one LCD monitor;

[0061] vi) the spinner member further comprising lights;

[0062] vii) the spinner member further comprising at least one whistle;

[0063] viii) the spinner member further comprising at least one speaker; or
ix) the spinner assembly operationally connected to a vehicle security system.

A still further embodiment of the wheel spinner assembly may comprise:

a. a spinner member having a central opening and being connected to a cover plate, wherein the cover plate is connected to a rim;

b. a chamber located in the rim;

c. a ring gear attached to the spinner member;

de. a bearing assembly positioned in the central opening;

f. at least one motor having a pinion for engaging the ring gear wherein said motor is positioned in said chamber; and

g. a battery pack positioned in the chamber for supplying power to the motor;

The above wheel spinner assembly may further comprise a host microprocessor, at least one spinner microprocessor and an operator interface.

Another embodiment includes a process for installing a wheel spinner assembly, comprising the steps of:

a. machining out a chamber of a rim to accommodate at least one motor, an electronics box and a battery pack;

b. positioning the motor, said electronics box and said battery pack in said chamber;

c. altering an existing cover plate of the rim to include a center hole and an opening for a pinion of the motor;

d. attaching a wheel spinner assembly to the cover plate using a cap or a shaft; and

e. attaching the cover plate to said rim.

Many other changes and modifications may be made in the design of the present invention without departing from the spirit thereof. Therefore, the rights to the present invention are intended to be limited only by the scope of the appended claims.

Parts List For Wheel Control System

Wheel Unit

- [0080] Modified Aveox Li60RC Speed Control Module
- [0081] Aveox Brushless DC Motor
- [0082] Linx TR-916-SC Radio Transceiver & Antenna
- [0083] Temperature Sensor
- [0084] Circuit Card for interconnection of modules
- [0085] NiCad Batteries & Charge Controller
- [0086] Fuse for overcurrent protection

Main Computer

- [0087] Enclosure for Main Computer
- [0088] Zworld Rabbit Core Module RCM 3100
- [0089] GPS Receiver/ Antenna for Speed Determination
- [0090] LinkSys WCF12 Wireless Ethernet Card
- [0091] Compact Flash Adapter Socket
- [0092] Linx TR-916-SC Radio Transceivers & Antennas
- [0093] Relays for Automotive Interface
- [0094] Light Emitting Diodes for Status Indication
- [0095] Power Supply Unit

Handheld

- [0096] IPAQ Pocket PC with Wireless Ethernet Connectivity

We claim:

1. A wheel spinner assembly adapted for mounting on a rim of a vehicle wheel, the assembly comprising:

   a. a spinner member;

   b. a bearing assembly capable of rotatively mounting the spinner member on the rim of the vehicle wheel; and

   c. drive motors for imparting rotational force on the spinner assembly independently from the vehicle wheel.

2. The wheel spinner assembly of claim 1, further comprising a means for remotely controlling operation of said drive motors.

3. The wheel spinner assembly of claim 1, wherein said drive motors control direction and speed of rotation of the spinner assembly.

4. The wheel spinner assembly of claim 1, further comprising a power source for operating said drive motors.

5. The wheel spinner assembly of claim 4, wherein said power source is a battery pack operationally connecting said drive motors to a remote control device.

6. The wheel spinner assembly of claim 1, further comprising a spinner member provided with a plurality of spokes extending radially from a central hub.

7. The wheel spinner assembly of claim 6, wherein said mounting means comprises a bearing assembly engaging the hub of the spinner member, a ring gear engaging the spinner member on an opposite side from said bearing assembly and a cover plate mounted between the ring gear and the rim of the vehicle wheel and detachably attached to the rim of the vehicle wheel.

8. The wheel spinner assembly of claim 7, wherein each of said drive motors is provided with a drive pinion, each of said pinions extending through the cover plate.

9. A wheel spinner assembly adapted for mounting on a rim of a vehicle wheel, the assembly comprising:

   a. a spinner assembly comprising drive motors for imparting rotational force on a spinner assembly independently from the vehicle wheel;

   b. a mounting assembly comprising a bearing assembly engaging the hub of the spinner member, a ring gear engaging the spinner member on an opposite side from said bearing assembly and a cover plate mounted between the ring gear and the rim of the vehicle wheel and detachably mountable on the rim of the vehicle wheel; and

   c. a remote transmitter and a receiver mounted for an operational connection with the drive motors, said
transmitter sending a signal for selecting speed and
direction of rotation of the spinner assembly.

10. The wheel spinner assembly of claim 9, wherein said
spinner assembly comprises a spinner member provided
with a plurality of spokes extending radially from a central
hub.

11. The wheel spinner assembly of claim 10, further
comprising a host microprocessor and at least one spinner
microprocessors.

12. The wheel spinner assembly of claim 13, further
comprising a GPS receiver operationally connected to said
microprocessor.

13. A wheel spinner assembly, comprising:

b. a spinner member having a central opening;

c. a ring gear attached to said spinner member;

d. a bearing assembly positioned in said central opening;

e. at least one motor having a pinion for engaging said
ring gear; and

f. a power source for supplying power to said motor;

14. The wheel spinner assembly in claim 13 wherein said
power source is a battery pack.

15. The wheel spinner assembly in claim 13, further
comprising a host microprocessor.

16. The wheel spinner assembly in claim 13, further
comprising a spinner microprocessor operationally con-
ected to said motor.

17. The wheel spinner assembly in claim 13 further
comprising a host microprocessor and a spinner micropro-
cessor, wherein said host microprocessor and said spinner
microprocessor are able to communicate with each other.

18. The wheel spinner assembly in claim 16, further
comprising an operator interface, wherein said operator
interface is able to communicate with said spinner micro-
processor.

19. The wheel spinner assembly in claim 17, further
comprising an operator interface, wherein said operator
interface is able to communicate with said host micropro-
cessor.

20. The wheel spinner assembly in claim 18, wherein said
operator interface is a PDA.

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