

Pedal / electric ultra light frames of personal trikes and quads

The normal riding mode of existing tricycles ridden by children is implemented with single front wheel and double rear wheels, where the single front wheel is a steering wheel which may be controlled via a handlebar to control steering. For sake of riding safety, the riding mode of some tricycles is implemented with double front wheels and single rear wheel. For example, the Chinese patent application CN 101830264A discloses a novel front-mounted type tricycle vehicle, including a novel front-mounted type motor tricycle, a novel front-mounted type electric tricycle, and a novel front-mounted type tricycle. The tricycle vehicle has the structure of two front wheels and one rear wheel. A front fork portion comprises a direction control lever, a left-and-right eccentric steering mechanism, a front fork fixing frame, a damping device, a left wheel and a right wheel. The direction control lever has a pivot point in its middle, and is coupled to the front fork fixing frame by a pivot shaft. The front fork fixing frame is coupled and integrated together with the ridge of the tricycle body. The rear wheel is disposed under the crossbar of the tricycle body. A front saddle and a back saddle are disposed above the rear wheel. For another example, the Chinese patent application CN 1572644A discloses a three-wheel rolling vehicle with a front two-wheel steering mechanism, the vehicle comprising a frame, a handlebar, a rear wheel rotating with respect to the frame, and a steering assembly which operates two front wheels. Two horizontal crossbars are disposed, and coupled to side tubes via hinges and coupled to the frame via additional hinges.

The side tubes rotatably support steering tubes. All these existing tricycles have only one riding mode, either a mode of single front wheel and double rear wheels or a mode of double front wheels and single rear wheel. It is not possible to simultaneously have two riding modes implemented on the same tricycle, not to mention to switch between two riding modes. In other words, if riders are to enjoy the fun of two riding modes, they have to own two tricycles having different riding modes, which is not convenient for the riders.

SUMMARY OF THE INVENTION

The technical problem to be solved by the invention is to overcome the deficiencies existed in the prior art. The invention provides a tricycle, which may easily switch between two riding modes and may increase the fun of riding.

The present invention discloses a tricycle having two riding modes, the tricycle comprising: a frame, a single-wheel assembly and a first handlebar mounting base that are disposed at one end of the frame along its longitude, a double-wheel assembly and a second handlebar mounting base that are disposed at the other end of the frame along its longitude, a transmission mechanism disposed between the second handlebar mounting base and the first handlebar mounting base, and a handlebar assembly selectively disposed on the first handlebar mounting base or the second handlebar mounting base, the single-wheel assembly comprising a steering wheel and a first pedal for driving the steering wheel to roll, the double-wheel assembly comprising two wheels horizontally spaced apart and a second pedal for driving the two wheels to roll, the tricycle having a first riding mode with single front wheel and double rear wheels and a second riding mode with double front wheels and single rear wheel.

The tricycle further comprises a saddle, the frame having disposed thereon a first saddle mounting base and a second saddle mounting base, the saddle being disposed on the first saddle mounting base in the first riding mode, while the saddle being disposed on the second saddle mounting base in the second riding mode.

The first saddle mounting base is closer to the single-wheel assembly and the first handlebar mounting base compared with the second saddle mounting base.

The frame comprising at its end where the double-wheel assembly and the second handlebar mounting base are disposed: a longitudinal ridge which extends longitudinally and downwards at an angle of inclination and a mounting frame which extends from the end of the longitudinal ridge and downwards at an angle of inclination, the mounting frame being in the shape of "E" and comprising a horizontal ridge horizontally extending from the end of the longitudinal ridge and three cantilevers extending longitudinally from the horizontal ridge and downwards at an angle of inclination, where the two outer cantilevers having respectively disposed at their outer side one of the two wheels in the double-wheel assembly and having respectively disposed at their inner side two ends of the second pedal in the double-wheel assembly, and the middle cantilever having correspondingly disposed a central part of the second pedal.

The single-wheel assembly further comprises a wheel impact absorption mechanism for buffering the bounce of the steering wheel; and/or the double-wheel assembly further comprises two wheel impact absorption mechanisms respectively disposed in two wheels for buffering the bounce of the two wheels.

The single-wheel assembly further comprises a clutching mechanism disposed in the steering wheel for controlling whether the horizontal axis of the steering wheel and the first pedal are coupled together; and/or the double-wheel assembly further comprises two clutching mechanisms respectively disposed at the two wheels for respectively controlling whether the horizontal axes of the two wheels and the second pedal are coupled together.

The first handlebar mounting base comprises: a vertically-disposed tube, a body of steering mechanism that is disposed in the tube, and a first transmission interface mechanism coordinating with the body of steering mechanism, the body of steering mechanism being coupled to the single-wheel assembly, and directly coordinating with the handlebar assembly to form a steering assembly in a first riding mode.

The second handlebar mounting base comprising: a vertically-disposed tube, a second transmission interface mechanism disposed in the tube, where the body of steering mechanism coordinating with the handlebar assembly through the first transmission interface mechanism, the transmission mechanism and the second transmission interface mechanism so as to form a steering assembly in a second riding mode.

The steering assembly comprises: two discontinuous recessed members, each recessed member being an arch having two ends and distributing along the circumference of the tube; a guidance member which may be configured to rotate in the two recessed members, where the rotation is limited by the two ends of each recessed member; a supporting structure for supporting the tube; a pressure transmission member non-rotatably fixed on the supporting structure and coupled to the guidance member that may push the guidance member into one of the two recessed members, where the pressure transmission member being configured to quit the guidance member from one of the two recessed members in response to a pressure. This invention relates generally to compact, electrically energizable door strike apparatus, and more particularly, to an improved mechanism wherein a solenoid is operable to control strike latch mechanism, and wherein a solenoid may have either of two

different selected positions. In one position of the solenoid, the mechanism has a fail safe mode, wherein, if power to the solenoid fails, the bolt allows a door to be safely opened: and in the other selected position of the solenoid, the mechanism has a fail secure mode, wherein, if power to the solenoid fails, the bolt secures the door against opening.

There is need for electrically controlled strike bolts of simple, compact construction for securing doors against opening, and also for allowing door opening, in case of power failure.

Previously, these two functions required two different strike devices, each device preventing only one of these ~0 functions. No way was known, to my knowledge, to embody the two functions in a single mechanism which could be simply adjusted to allow one or the other of such functions to be in effect.

A major object of the invention to provide electrical release, door strike apparatus meeting the above need. Basically, the apparatus embodies: a) a carrier frame, b) a strike bolt carried by the frame for movement when released, allowing door opening, the bolt adapted to receive and resist door opening force prior to bolt movement, c) a solenoid carried by the frame to have either of two alternate positions relative to the frame, c) and means operatively connected between the solenoid and bolt in either of the positions to cause the bolt to assume i) a fail safe condition when the solenoid is in one of the positions, ii) a fail secure condition when the solenoid is in the other of the positions. It is another object to provide such means to include a carrier for the solenoid, the carrier movable between a first location when the solenoid is in its one position, and a second location when the solenoid is in the other of its positions. In this regard, a spring is typically employed for urging the carrier in a direction to assure the fail safe or fail secure condition: and guide means on the frames and carrier guides the carrier to move unidirectionally on the carrier, which may operate as a shuttle. The solenoid typically has a plunger and a body, the plunger movable axially to displace the carrier, the plunger extending