

5 **TWO-WHEELED SELF-BALANCING PATROL VEHICLE HAVING
FRAMEWORK**

Technical Field

The present invention relates to a self-balancing vehicle, and in particular to a two-wheeled self-balancing patrol vehicle having a framework.

10 **Background**

Currently, private car owners increase year by year, and the number of car ownership in the city tends to saturate, resulting in concomitant rise in oil prices and increasing urban traffic congestion. In such a context, self-balancing vehicles demonstrate non-replaceable advantages by their economic, environmental, convenient, and practical features. Using a self-balancing vehicle instead of a car as a means of transport can achieve both purposes of transportation and entertainment and is also a fashionable and wise choice.

Existing self-balancing vehicle products mainly include Segway vehicles in the US, and Ostrich self-balancing vehicles, Robstep-M1 transporters, and Taxue Wuhen self-balancing vehicles in China.

20 Existing self-balancing vehicle products mainly have the following disadvantages: the vehicle body is designed to be a box-type structure, and its structural strength is insufficient, wherein the wheels on both sides are directly fixed to the box-type vehicle body, thus all the weight carried on the vehicle is transferred to the wheels merely through the box-type body, causing the box-type body to be easily deformed due to the stress being
25 too concentrated and thus resulting in failure, especially under severe conditions such as riding on bumpy roads or collisions.

Summary

30 The purpose of the present invention is to provide a two-wheeled self-balancing patrol vehicle having a framework, so as to solve the problem of insufficient structural strength of the vehicle body in the prior art.

The purpose of the present invention is achieved by the following technical solution:

A two-wheeled self-balancing patrol vehicle having a framework includes a framework, hub motors, flanged wheels, a steering box, a steering rod, a battery box, a control box, an upper housing, and a lower housing. The framework is composed of a main frame, a rear support frame and a front support frame. The front support frame and the rear support frame are symmetrically fixed on the front and back of the main frame, the left and right sides of the main frame are symmetrically provided with motor mounting holes, and the hub motors are installed in the motor mounting holes. The flanged wheels are connected and fixed to the hub motors. A steering system mounting hole is provided on the front side of the main frame, the steering box is installed in the steering system mounting hole, and the steering rod is assembled with and connected to the steering box. The battery box and the control box are installed on the rear side of the main frame corresponding to the steering box. The upper housing is detachably connected to the front and rear support frames, and the lower housing is detachably connected to the upper housing.

Preferably, the front support frame and the rear support frame are both angle steel.

Such a structure is advantageous for reducing the overall weight of the vehicle body.

Preferably, the main frame is formed by casting followed by cutting, and therefore it can be manufactured easily and cost less.

Preferably, a shock-absorbing and sound-absorbing layer is provided between the upper housing and the front and rear support frames.

Preferably, the shock-absorbing and sound-absorbing layer is a rubber pad.

Preferably, the upper housing is further mounted with fenders.

Preferably, the steering rod has an illuminating lamp and a display mounted thereon.

Preferably, the steering rod is connected to an end of the steering box by a bolt, thereby limiting the freedom of the steering rod in the axial direction of the steering box.

Compared with the prior art, the beneficial effects of the present invention are as follows: the design is reasonable, a framework structure is adopted, thus the structural strength is greatly improved, and compared with various self-balancing vehicles of the prior art, the weight is slightly lighter, the battery load is lower, the speed is faster, the response speed is faster, and the battery run-time is longer.

Brief Description Of The Drawings

Figure 1 is an overall exploded view of the present invention;

Figure 2 is a perspective structural view of the framework of the present invention;

Figure 3 is a front structural view of the framework of the present invention;

5 FIG. 4 is a top view of the framework of the present invention;

FIG. 5 is a left view of the framework of the present invention.

Detailed Description

The present invention is further described below with reference to specific embodiments and drawings.

10 As shown in FIGs 1 to 5, a two-wheeled self-balancing patrol vehicle having a framework includes a framework 4, hub motors 5, flanged wheels 7, a steering box 3, a steering rod 2, a battery box 6, a control box 10, an upper housing 9 and a lower housing 1. The framework 4 is composed of a main frame 4-1, a rear support frame 4-2 and a front support frame 4-3. The front support frame 4-3 and the rear support frame 4-2 are
15 symmetrically fixed on the front and back of the main frame 4-1, and the top surfaces of the main frame 4-1, the front support frame 4-3 and the rear support frame 4-2 are flush. The left and right sides of the main frame 4-1 are symmetrically provided with motor mounting holes 4-4, and the hub motors 5 are installed in the motor mounting holes 4-4. The flanged wheels 7 are connected and fixed to the hub motors 5. A steering system
20 mounting hole 4-5 is provided on the front side of the main frame 4-1, the steering box 3 is installed in the steering system mounting hole 4-5, the steering rod 2 is assembled with and connected to the steering box 3, and the steering rod 2 is connected to an end of the steering box 3 by a bolt, thereby limiting the freedom of the steering rod 2 in the axial direction of the steering box 3. The battery box 6 and the control box 10 are installed on
25 the rear side of the main frame 4-1 corresponding to the steering box 3. The upper housing 9 is fixed to the front support frame 4-3 and the rear support frame 4-2 through bolts, and the lower housing 1 is connected to the upper housing 9 through bolts. The upper housing 9 is further mounted with fenders 8. The steering rod 2 has an illuminating lamp and a display mounted thereon. A control system board is fixed in the control box 10, and wires

are used to deliver power in the battery box 6 to electrical components such as the control system board, the hub motors 5, the illuminating lamp, the display, and the like.

To further reduce the overall weight of the vehicle body, both the front support frame 4-3 and the rear support frame 4-2 are angle steels.

5 In order to enhance shock and sound absorbing performance, a rubber pad (not shown in the figures) is provided between the upper housing 9 and the front support frame 4-3 and the rear support frame 4-2.

10 The main frame 4-1 is molded into the shape of the main body by casting, then the motor mounting holes 4-4 are provided on the left and right sides of the main frame 4-1 by cutting, and a steering system mounting hole 4-5 is provided on the front side of the main frame 4-1 by cutting, which is an easy and low-cost manufacturing method.

15 The two-wheeled self-balancing patrol vehicle body of the present invention adopts a framework structure, the structural strength is greatly improved, and compared with various self-balancing vehicles of the prior art, the weight is slightly lighter, the battery load is lower, the speed is faster, the response speed is faster, and the battery run-time is longer.

20 The above descriptions are only preferred embodiments of the present invention and are not intended to limit the present invention. Any modifications, equivalent substitutions, improvements, and the like made within the spirit and principle of the present invention shall fall within the protection scope of the present invention.

What is claimed is:

1. A two-wheeled self-balancing patrol vehicle having a framework, comprising a framework, hub motors, flanged wheels, a steering box, a steering rod, a battery box, a control box, an upper housing, and a lower housing, wherein the framework is composed of a main frame, a rear support frame and a front support frame, the front support frame and the rear support frame are symmetrically fixed on the front and back of the main frame, the left and right sides of the main frame are symmetrically provided with motor mounting holes, and the hub motors are installed in the motor mounting holes, the flanged wheels are connected and fixed to the hub motors, a steering system mounting hole is provided on the front side of the main frame, the steering box is installed in the steering system mounting hole, the steering rod is assembled with and connected to the steering box, the battery box and the control box are installed on the rear side of the main frame corresponding to the steering box, the upper housing is detachably connected to the front and rear support frames, and the lower housing is detachably connected to the upper housing.

2. The two-wheeled self-balancing patrol vehicle having a framework of claim 1, wherein the front support frame and the rear support frame are both angle steel.

3. The two-wheeled self-balancing patrol vehicle having a framework of claim 2, wherein the main frame is formed by casting followed by cutting.

4. The two-wheeled self-balancing patrol vehicle having a framework of claim 1, wherein a shock-absorbing and sound-absorbing layer is provided between the upper housing and the front and rear support frames.

5. The two-wheeled self-balancing patrol vehicle having a framework of claim 4, wherein the shock-absorbing and sound-absorbing layer is a rubber pad.

6. The two-wheeled self-balancing patrol vehicle having a framework of claim 1, wherein the upper housing is further mounted with fenders.

7. The two-wheeled self-balancing patrol vehicle having a framework of claim 1, wherein the steering rod has an illuminating lamp and a display mounted thereon.

8. The two-wheeled self-balancing patrol vehicle having a framework of claim 1, wherein the steering rod is connected to an end of the steering box by a bolt.

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