【CLAIMS】

1. A bike having an automatic landing wheel apparatus comprising:

a left landing wheel arm provided at a left side of the bike and having a lower end portion rotatably coupled with a left landing wheel to move the left landing wheel up and down;

a right landing wheel arm provided at a right side of the bike and having a lower end portion rotatably coupled with a right landing wheel to move the right landing wheel up and down;

a left drive unit configured to drive the left landing wheel arm to raise and lower the left landing wheel;

a right drive unit configured to drive the right landing wheel arm to raise and lower the right landing wheel;

a speed sensor configured to sense a speed of the bike; and

a controller connected to the speed sensor, the left drive unit and the right drive unit to raise both or one of the left landing wheel and the right landing wheel when a speed sensed by the speed sensor exceeds a set speed and to lower both or one of the left landing wheel and the

right landing wheel when the speed sensed by the speed sensor becomes the set speed or less,

wherein the left landing wheel arm has an upper end portion rotatably mounted on a left side portion of the bike so as to vertically rotate about a shaft extending in a horizontal direction, and the right landing wheel arm has an upper end portion rotatably mounted on a right side portion of the bike so as to vertically rotate about a shaft extending in a horizontal direction,

wherein the left drive unit is configured to rotate the left landing wheel arm in forward and reverse directions, and the right drive unit is configured to rotate the right landing wheel arm in forward and reverse directions,

wherein the drive unit comprises:

a cam configured to receive driving force of a landing motor capable of rotating in forward and reverse directions and to rotate about a horizontal shaft to push and lower the landing wheel arms; and

a pull spring configured to pull the landing wheel arms to raise the landing wheel arms when a shortest distance between a rotation center of the cam and the cam and the landing wheel arms is reduced,

wherein each of the landing wheel arms has a bent portion having a part bent to have an L shape or a C shape

between an upper end portion and a lower end portion of the bent portion, and

wherein an inside part of the bent portion is provided with a shock absorbing means such that the shock absorbing means contacts the cam.

2. A bike having an automatic landing wheel apparatus comprising:

a left landing wheel arm provided at a left side of the bike and having a lower end portion rotatably coupled with a left landing wheel to move the left landing wheel up and down;

a right landing wheel arm provided at a right side of the bike and having a lower end portion rotatably coupled with a right landing wheel to move the right landing wheel up and down;

a left drive unit configured to drive the left landing wheel arm to raise and lower the left landing wheel;

a right drive unit configured to drive the right landing wheel arm to raise and lower the right landing wheel;

a speed sensor configured to sense a speed of the bike; and

a controller connected to the speed sensor, the left drive unit and the right drive unit to raise both or one of the left landing wheel and the right landing wheel when a speed sensed by the speed sensor exceeds a set speed and to lower both or one of the left landing wheel and the right landing wheel when the speed sensed by the speed sensor becomes the set speed or less,

wherein the left landing wheel arm has an upper end portion rotatably mounted on a left side portion of the bike so as to vertically rotate about a shaft extending in a horizontal direction, and the right landing wheel arm has an upper end portion rotatably mounted on a right side portion of the bike so as to vertically rotate about a shaft extending in a horizontal direction,

wherein the left drive unit is configured to rotate the left landing wheel arm in forward and reverse directions, and the right drive unit is configured to rotate the right landing wheel arm in forward and reverse directions,

wherein the drive unit comprises:

an air cylinder device capable of raising or lowering a piston rod according to an electric signal, the air cylinder device being configured to lower the landing wheel arms when the piston rod is lowered to push the landing wheel arms; and

a pull spring configured to pull the landing wheel arms to raise the landing wheel arms when the piston rod rises,

wherein each of the landing wheel arms has a bent portion having a part bent to have an L shape or a C shape between an upper end portion and a lower end portion of the bent portion, and

wherein an inside part of the bent portion is provided with a shock absorbing means such that the shock absorbing means contacts the piston rod.

3. The bike according to claim 1 or 2, wherein the bike is provided with a canopy having a space for accommodating a driver,

wherein each of both side parts of a rear portion of the canopy comprises a side trunk providing a storage space for the automatic landing wheel apparatus.

4. The bike according to claim 3, wherein a front portion of the canopy comprises:

a windshield having an outer surface matching an outer surface of a part of a spherical body;

a pair of left and right windshield wipers curved in an arc shape so as to come into close contact with the outer surface of the windshield; and

a windshield wiper driving means configured to drive the windshield wipers to reciprocate up and down.

5. The bike according to claim 1 or 2, wherein the shock absorbing means is a leaf spring having one end coupled to a corresponding one of the landing wheel arms and an opposite end, the opposite end being a free end.

6. The bike according to claim 5, wherein the leaf spring has a plurality of leaf springs arranged in parallel.

7. The bike according to claim 1 or 2, wherein the shock absorbing means comprises:

a leaf spring having an upper end portion hinged to the upper end of a corresponding one of the landing wheel arms, the leaf spring being formed in a curved shape along a curvature of the corresponding one of the landing wheel arms; and

a coil spring having an upper end coupled to a lower end portion of the leaf spring and a lower end coupled to the corresponding one of the landing wheel arms, the coil spring being elastically arranged between the leaf spring and the corresponding one of the landing wheel arms.

8. The bike according to claim 1 or 2, further comprising:

an automatic upright position control/maintenance system configured to measure a degree of inclination of the bike to a left side or a right side with respect to an upright position of the bike,

wherein the automatic upright position control/maintenance system and the controller are connected to each other,

wherein the controller lowers only the left landing wheel when the bike is inclined to the left side by a predetermined angle or more and lowers only the right landing wheel when the bike is inclined to the right side by the predetermined angle or more.

9. The bike according to claim 8, wherein, when the bike is further inclined to the left side by a preset angle after the left landing wheel is lowered according to inclination of the bike to the left side by the predetermined angle or more, the controller raises the right landing wheel,

wherein, when the bike is further inclined to the right side by the preset angle after the right landing wheel is lowered according to inclination of the bike to

the right side by the predetermined angle or more, the controller raises the right landing wheel.

10. The bike according to claim 8, wherein the automatic upright position control/maintenance system comprises:

a pendulum coupled to a rotation shaft so as to be freely rotatable left or right and kept positioned on a vertical line even if the bike is tilted by a weight thereof;

an electrode rod coupled to the pendulum to move together with the pendulum;

a center electrode plate fixedly installed on the bike so as to contact the electrode rod when the bike is positioned upright; and

an electrode substrate arranged in series on a left side or right side of the center electrode plate and fixedly installed on the bike to make a contact with the electrode rod when the bike is inclined leftward and rightward by a certain angle or more,

wherein the electrode rod contacts the center electrode plate within a certain range of inclination with respect to an upright position of the bike,

wherein the electrode substrate comprises a plurality of electrode substrates, and the electrode substrate contacting the electrode rod varies among the plurality of

electrode substrates according to a degree of inclination of the electroderod, such that a degree of inclination of the bike is identified.

11. The bike according to claim 3, wherein the automatic landing wheel apparatus comprises a left landing wheel apparatus and a right landing wheel apparatus,

wherein the left landing wheel apparatus comprises the left landing wheel arm, the left landing wheel and the left drive unit, and is coupled to a guide linearly movable to the left or right through the left side trunk so as to move to the left or right,

wherein the right landing wheel apparatus comprises the right landing wheel arm, the right landing wheel, and the right drive unit, and is coupled to a guide linearly movable to the left or right through the right side trunk so as to move to the left or right.

12. The bike according to claim 11, wherein a left rack is coupled to a right side of the left landing wheel apparatus and a right rack is coupled to a left side of the right landing wheel apparatus,

wherein the automatic landing wheel apparatus comprises a pinion engaging with the left rack and the right rack, and a motor configured to drive the pinion,

wherein the motor is driven to bring the left landing wheel apparatus and the right landing wheel apparatus close to or away from each other at the same time.