Claims

1. A battery replacing platform for replacing a battery of an electric vehicle, wherein the battery replacing platform comprises:

an upper board for carrying a replacement battery; a lower board which is mounted under the upper board;

an unlocking device mounted on the battery replacing platform for unlocking the battery locking device mounted on the electric vehicle;

a movement-driving device which is connected and mounted to the upper board by a driving output end, in order to drive the upper board to move in a horizontal direction relative to the lower board, so that an unlocked battery to be charged is released from the electric vehicle and directly falls on the upper board or the replacement battery is stuck into a battery mounting seating of the electric vehicle;

wherein the movement-driving device comprising a driving portion and a screw rod mounted on the driving output end, a pushing board is fixedly mounted to the lower surface of the upper board, the pushing board is connected to the screw rod through a threaded hole, or fixedly mounted with a nut covered on the screw rod.

2. A battery replacing platform for replacing a battery of an electric vehicle, wherein the battery replacing platform comprises:

an upper board for carrying a replacement battery;

a lower board which is mounted under the upper board, the upper board is further provided with a bridge column, wherein the bridge column has a groove opening upwardly; and

a movement-driving device which is connected and mounted to the upper board by a driving output end, in order to drive the upper board to move in a horizontal direction relative to the lower board, so that an unlocked battery to be charged is released from the electric vehicle and directly falls on the upper board or the replacement battery is stuck into a battery mounting seating of the electric vehicle;

wherein the movement-driving device comprising a driving portion and a screw rod mounted on the driving output end, a pushing board is fixedly mounted to the lower surface of the upper board, the pushing board is connected to the screw rod through a threaded hole, or fixedly mounted with a nut covered on the screw rod.

3. The battery replacing platform of claim 1, wherein

the unlocking device comprises a movable seat, an unlocking ejector rod vertically mounted on the upper surface of the movable seat, and a driving member that drives the movable seat to move horizontally along a plane of the upper board.

4. The battery replacing platform of claim 2, wherein

the battery replacing platform comprising an unlocking device, wherein the unlocking device comprises a movable seat, an unlocking ejector rod vertically mounted on the upper surface of the movable seat, and a driving member that drives the movable seat to move horizontally along a plane of the upper board.

5. The battery replacing platform of claim 1 or 2, wherein

the screw rod is a ball screw, and the nut is a ball nut.

6. The battery replacing platform of claim 1, wherein

the upper surface of the upper board is further provided with a bridge column for positioning and mounting the battery, wherein the bridge column has a groove with an upward opening, and the bridge column is provided with a positioning magnetic steel.

7. The battery replacing platform of claim 2, wherein

the upper surface of the upper board is further provided with the bridge column for positioning and mounting the battery, and the bridge column is provided with a positioning magnetic steel.

8. The battery replacing platform of claim 1 or 2, wherein

the upper surface of the upper board is further provided with a sensor for detecting whether the battery is in place or not.

9. The battery replacing platform of claim 1 or 2, wherein

a battery tray is mounted on the upper surface of the upper board, wherein a positioning rod is mounted on a lower surface of the battery tray, wherein a spring fixing seat is mounted on the upper surface of the upper board, wherein the positioning rod is matched and mounted with the spring fixing seat on the upper surface of the upper board.

10. The battery replacing platform of claim 9, wherein

the upper surface of the battery tray has a plurality of guide boards having grooves with upward openings for mounting and fixing the battery.

11. The battery replacing platform of any one of claims 1, 5, and 10, wherein

the movement-driving device is mounted to a lower surface of the lower board by a fixing seat, wherein the pushing board passes through a mounting hole of the lower board and is fixed to the lower surface of the upper board.

12. The battery replacing platform of claim 11, wherein

a sliding device is mounted between the upper board and the lower board, wherein the sliding device includes a sliding rail fixed to an upper surface of the lower board and a slider fixed to the lower surface of the upper board, wherein the slider is engaged with the sliding rail.

13. The battery replacing platform of claim 12, wherein

a receiving groove protruding upwardly is disposed at a position of the upper board which is corresponding to the sliding rail, wherein the slider is fixed within the receiving groove.

14. The battery replacing platform of claim 13, wherein

a sliding board is provided between the upper board and the lower board for reducing friction between the upper board and lower board.

15. A movable battery replacing platform, wherein the movable battery replacing platform comprises a lifting portion, a travel-driving portion and a battery mounting portion;

the battery mounting portion is mounted on a top of the lifting portion for placing a battery to be replaced or a replaced battery;

the lifting portion is mounted on the travel-driving portion for the implement

of lifting the battery during replacing the battery;

the travel-driving portion is used for driving the movable battery replacing platform to move on the ground;

the battery mounting portion comprises a battery replacing platform, an unlocking device is mounted on the battery replacing platform for unlocking the battery locking device mounted on the electric vehicle, the battery replacing platform comprises an upper board for carrying a replacement battery, a lower board which is mounted under the upper board and a movement-driving device, the movement-driving device is connected and mounted to the upper board by a driving output end, in order to drive the upper board to move in a horizontal direction relative to the lower board, so that an unlocked battery to be charged is released from the electric vehicle and directly falls on the upper board or the replacement battery is stuck into a battery mounting seating of the electric vehicle;

wherein the movement-driving device comprising a driving portion and a screw rod mounted on the driving output end, a pushing board is fixedly mounted to the lower surface of the upper board, the pushing board is connected to the screw rod through a threaded hole, or fixedly mounted with a nut covered on the screw rod.

16. A quick replacing system, wherein the quick replacing system comprises:

a battery holder for arranging a replacement battery of the electric vehicle, and a battery to be charged which is replaced from the electric vehicle;

a palletizer for placing the battery to be charged which is replaced in the battery holder, and removing the replacement battery from the battery holder; and

the movable battery replacing platform of claim 15.

17. A method for battery replacement, wherein the battery replacing platform of any one of claims 1, 5, 10, 12-14 is used in the method, the method comprising the steps of:

having the unlocking device of the battery replacing platform contact the battery locking device in the battery mounting seating at the bottom of the electric vehicle, so that the battery to be charged is unlocked;

having the upper board of the battery replacing platform move in the horizontal direction relative to the lower board, so that the unlocked battery to be charged is detached from the electric vehicle and directly fall on the upper board;

using the battery replacing platform to transport away the battery to be charged and transport back the replacement battery;

having the upper board of the battery replacing platform be moved in a horizontal direction relative to the lower board, so that the replacement battery is locked in the battery mounting seating of the electric vehicle.

18. A method for battery replacement, wherein the battery replacing platform of claim 2 is used in the method, the battery replacing platform comprising an unlocking device, the method comprising the steps of:

having the unlocking device of the battery replacing platform contact the battery locking device in the battery mounting seating at the bottom of the electric vehicle, so that the battery to be charged is unlocked;

having the upper board of the battery replacing platform move in the horizontal direction relative to the lower board, so that the unlocked battery to be charged is detached from the electric vehicle and directly fall on the upper board;

using the battery replacing platform to transport away the battery to be charged and transport back the replacement battery;

having the upper board of the battery replacing platform be moved in a horizontal direction relative to the lower board, so that the replacement battery is locked in the battery mounting seating of the electric vehicle.

19. The method of claim 17 or 18, wherein the method uses a travel-driving portion for driving the battery replacing platform to move;

the method comprises:

before having the unlocking device of the battery replacing platform contact the battery locking device in the battery mounting seating at the bottom of the electric vehicle, using the travel-driving portion to move the battery replacing platform to the bottom of the electric vehicle; and

using the travel-driving portion to move the battery replacing platform to transport away the battery to be charged and transport back the replacement battery.

20. The method of claim 19, wherein the method also uses a lifting portion mounted on the travel-driving portion for the implement of lifting the battery during replacing the battery the battery replacing platform is mounted on the top of the lifting portion;

the method comprises:

after using the travel-driving portion to move the battery replacing platform to the bottom of the electric vehicle, using the lifting portion to raise the battery replacing platform so that the unlocking device of the battery replacing platform contacts the battery locking device in the battery mounting seating at the bottom of the electric vehicle;

after the unlocked battery to be charged is detached from the electric vehicle and directly fall on the upper board, using the lifting portion to lower the battery

replacing platform;

after transporting back the replacement battery, using the lifting portion to raise the battery replacement platform to snap the replacement battery into the battery mounting seating of the electric vehicle.