Claims

1. A retractable charging apparatus for charging a power pack, comprising a retraction roller mechanism, a charging mechanism and a main control PCB, wherein the retraction roller mechanism includes a first driving device, a transmission assembly in driving connection to the first driving device, and at least one roller assembly connected with the transmission assembly; each of the at least one roller assembly includes two opposite rollers for retracting the power pack by a friction force of the rollers; the first driving device is electrically connected with the main control PCB; and the charging mechanism includes a charging PCB connected with the main control PCB.

2. Retractable charging apparatus according to claim 1, characterized in that, the transmission assembly comprises a pulley group corresponding to the at least one roller assembly, or the transmission assembly comprises a gear group corresponding to the at least one roller assembly.

3. Retractable charging apparatus according to claim 1, characterized in that, when the retraction roller mechanism includes more than one roller assembly, the transmission assembly comprises a corresponding

number of pulley groups, each pulley group including two pulleys and a belt, the two pulleys and the belt of a first pulley group being connected with the first driving device and a first roller assembly, and two adjacent roller assemblies being connected through two pulleys and a belt of the other pulley group (s).

4. Retractable charging apparatus according to claim 3, characterized in that, the pulleys connected to each roller assembly are arranged on two sides of each roller assembly.

5. Retractable charging apparatus according to any one of claims 1 to 4, characterized in that, the retractable charging apparatus comprises an inlet/outlet door mechanism.

6. Retractable charging apparatus according to claim 5, characterized in that, the inlet/outlet door mechanism comprises an eccentric shaft, a second driving device, guide rails, and a door vertically slidable along the guide rails, the second driving device being connected with the main control PCB, the eccentric shaft being connected with the second driving device, and the door including a cross bar disposed above and abutting against the eccentric shaft.

7. Retractable charging apparatus according to claim 6, characterized in that, the inlet/outlet door mechanism is further provided with guiding means for guiding entrance of the power pack.

8. Retractable charging apparatus according to any one of claims 1 to 4, further comprising a thru-beam sensor arranged at an inlet of the retractable charging apparatus and connected with the main control PCB.

9. Retractable charging apparatus according to any one of claims 1 to 4, further comprising slide rails arranged between the opposite rollers.

10. Retractable charging apparatus according to any one of claims 1 to 4, characterized in that, the charging PCB is provided with at least two pins matching with pole contacts of the power pack and connected with the charging PCB.

11. Retractable charging apparatus according to claim 10, characterized in that, the tip of each pin is of a retractable pogo pin design.

12. Retractable charging apparatus according to claim 11, characterized in that, the charging mechanism further comprises a PCB fixing seat, on

which the charging PCB is arranged, and the PCB fixing seat is provided with a pin guide, through which the pin is inserted.

13. Retractable charging apparatus according to claim 11, characterized in that, the charging mechanism further comprises a PCB fixing seat, on which the charging PCB is arranged, and the PCB fixing seat is provided with a position limiting part for limiting the insertion position of the power pack.

14. Retractable charging apparatus according to claim 11, characterized by, the charging mechanism further comprises a PCB fixing seat, on which the charging PCB is arranged, and a trigger switch is disposed on the PCB fixing seat and connected with the main control PCB.

15. Retractable charging apparatus according to claim 14, characterized in that the trigger switch is a snap dome typed mechanical trigger switch.