WHAT IS CLAIMED IS:

1. A charge method, comprising:

after an adapter is coupled with a mobile terminal via a charging interface, communicating, by the adapter, with the mobile terminal to determine a charging mode, wherein a power wire in the charging interface is configured to charge a battery, a data wire in the charging interface is used for communication between the adapter and the mobile terminal, and the charging mode comprises a quick charging mode and a conventional charging mode, in which a charging speed in the quick charging mode is greater than that in the conventional charging mode;

under a situation of determining to charge the battery in the quick charging mode, communicating, by the adapter, with the mobile terminal to determine a charging current corresponding to the quick charging mode; and

adopting, by the adapter according to the charging current corresponding to the quick charging mode, a unidirectional pulse output current to perform a quick charge on the battery,

wherein the quick charge comprises a current falling process, and in the current falling process, a peak value of a latter one in two adjacent waveforms of the unidirectional pulse output current is less than that of a former one in the two adjacent waveforms.

2. The method according to claim 1, wherein, during the quick charge, a peak value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode, or a mean value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode.

3. The method according to claim 1 or 2, wherein, the quick charge comprises a current falling process, the current falling process is divided into a plurality of stages comprising a first stage and a second stage adjacent to the first stage, in which

the first stage is earlier than the second stage, a waveform of the unidirectional pulse output current remains constant within each of the plurality of stages, a peak value of a waveform of the unidirectional pulse output current in the second stage is less than that of a waveform of the unidirectional pulse output current in the first stage.

4. The method according to any one of claims 1-3, wherein, before adopting, by the adapter according to the charging current corresponding to the quick charging mode, a unidirectional pulse output current to perform a quick charge on the battery, the method further comprises:

under a situation that the adapter determines to charge the battery in the quick charging mode, communicating, by the adapter, with the mobile terminal to determine a charging voltage corresponding to the quick charging mode; and

adopting, by the adapter according to the charging voltage corresponding to the quick charging mode, a unidirectional pulse output voltage to perform a quick charge on the battery.

5. The method according to claim 4, wherein, during the quick charge, a peak value of an initial waveform of the unidirectional pulse output voltage is equal to a voltage value of the charging voltage corresponding to the quick charging mode, or a mean value of an initial waveform of the unidirectional pulse output voltage is equal to a voltage value of the charging voltage corresponding to the quick charging mode.

6. The method according to any one of claims 1-5, wherein, the unidirectional pulse output current is a current outputted from a rectifying circuit in the adapter without a filtering, and/or a pulse frequency of the unidirectional pulse output current is same with a frequency of an alternating current power supply grid.

7. A charge method, comprising:

after a mobile terminal is coupled with an adapter via a charging interface, communicating, by the mobile terminal, with the adapter to determine a charging mode,

wherein a power wire in the charging interface is configured to charge a battery, a data wire in the charging interface is used for communication between the mobile terminal and the adapter, and the charging mode comprises a quick charging mode and a conventional charging mode, in which a charging speed in the quick charging mode is greater than that in the conventional charging mode;

under a situation of determining to charge the battery in the quick charging mode, communicating, by the mobile terminal, with the adapter to determine a charging current corresponding to the quick charging mode; and

receiving, by the mobile terminal, a unidirectional pulse output current from the adapter so as to perform a quick charge on the battery, wherein the unidirectional pulse output current is determined by the adapter according to the charging current corresponding to the quick charging mode,

wherein the quick charge comprises a current falling process, and in the current falling process, a peak value of a latter one in two adjacent waveforms of the unidirectional pulse output current is less than that of a former one in the two adjacent waveforms.

8. The method according to claim 7, wherein, during the quick charge, a peak value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode, or a mean value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode.

9. The method according to claim 7 or 8, wherein, the quick charge comprises a current falling process, and the current falling process is divided into a plurality of stages comprising a first stage and a second stage adjacent to the first stage, in which the first stage is earlier than the second stage, a waveform of the unidirectional pulse output current remains constant within each of the plurality of stages, a peak value of a waveform of the unidirectional pulse output current in the second stage is less than that of a waveform of the unidirectional pulse output current in the first stage.

10. The method according to any one of claims 7-9, wherein, before receiving, by the mobile terminal, a unidirectional pulse output current from the adapter so as to perform a quick charge on the battery, the method further comprises:

under a situation of determining to charge the battery in the quick charging mode, communicating, by the mobile terminal, with the adapter to determine a charging voltage corresponding to the quick charging mode; and

receiving, by the mobile terminal, a unidirectional pulse output voltage from the adapter so as to perform a quick charge on the battery, wherein the unidirectional pulse output voltage is determined by the adapter according to the charging voltage corresponding to the quick charging mode.

11. The method according to claim 10, wherein, during the quick charge, a peak value of an initial waveform of the unidirectional pulse output voltage is equal to a voltage value of the charging voltage corresponding to the quick charging mode, or a mean value of an initial waveform of the unidirectional pulse output voltage is equal to a voltage value of the charging voltage corresponding to the quick charging mode.

12. The method according to any one of claims 7-11, wherein, the unidirectional pulse output current is a current outputted from a rectifying circuit in the adapter without a filtering, and/or a pulse frequency of the unidirectional pulse output current of the adapter is same with a frequency of an alternating current power supply grid.

13. An adapter, comprising a communication control circuit and a charging circuit, wherein,

the communication control circuit is configured to:

communicate with a mobile terminal to determine a charging mode, after the adapter is coupled with the mobile terminal via a charging interface, wherein a power wire in the charging interface is configured to charge a battery, a data

wire in the charging interface is used for communication between the adapter and the mobile terminal, and the charging mode comprises a quick charging mode and a conventional charging mode, in which a charging speed in the quick charging mode is greater than that in the conventional charging mode;

communicate with the mobile terminal to determine a charging current corresponding to the quick charging mode, under a situation of determining to charge the battery in the quick charging mode; and

adopt, according to the charging current corresponding to the quick charging mode, a unidirectional pulse output current to perform a quick charge on the battery via the charging circuit,

wherein the quick charge comprises a current falling process, and in the current falling process, a peak value of a latter one in two adjacent waveforms of the unidirectional pulse output current is less than that of a former one in the two adjacent waveforms.

14. The adapter according to claim 13, wherein, during the quick charge, a peak value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode, or a mean value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode.

15. The adapter according to claim 13 or 14, wherein, the quick charge comprises a current falling process, and the current falling process is divided into a plurality of stages comprising a first stage and a second stage adjacent to the first stage, in which the first stage is earlier than the second stage, a waveform of the unidirectional pulse output current remains constant within each of the plurality of stages, a peak value of a waveform of the unidirectional pulse output current in the second stage is less than that of a waveform of the unidirectional pulse output current in the first stage.

16. The adapter according to any one of claims 13-15, wherein, the communication control circuit is further configured to:

communicate with the mobile terminal to determine a charging voltage corresponding to the quick charging mode, under a situation that the adapter determines to charge the battery in the quick charging mode; and

adopt, according to the charging voltage corresponding to the quick charging mode, a unidirectional pulse output voltage to perform a quick charge on the battery.

17. The adapter according to any one of claims 13-16, wherein, the unidirectional pulse output current is a current outputted from a rectifying circuit in the adapter without a filtering.

18. A mobile terminal, comprising a communication control circuit and a charging circuit, wherein,

the communication control circuit is configured to:

communicate with the adapter to determine a charging mode, after the mobile terminal is coupled with an adapter via a charging interface, wherein the charging mode comprises a quick charging mode and a conventional charging mode, in which a charging speed in the quick charging mode is greater than that in the conventional charging mode;

communicate with the adapter to determine a charging current corresponding to the quick charging mode, under a situation of determining to charge the battery in the quick charging mode; and

receive a unidirectional pulse output current from the adapter so as to perform a quick charge on the battery via the charging circuit, wherein the unidirectional pulse output current is determined by the adapter according to the charging current corresponding to the quick charging mode,

wherein the quick charge comprises a current falling process, and in the current falling process, a peak value of a latter one in two adjacent waveforms of

the unidirectional pulse output current is less than that of a former one in the two adjacent waveforms.

19. The mobile terminal according to claim 18, wherein, during the quick charge, a peak value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode, or a mean value of an initial waveform of the unidirectional pulse output current is equal to a current value of the charging current corresponding to the quick charging mode.

20. The mobile terminal according to claim 18 or 19, wherein, the quick charge comprises a current falling process, and the current falling process is divided into a plurality of stages comprising a first stage and a second stage adjacent to the first stage, in which the first stage is earlier than the second stage, a waveform of the unidirectional pulse output current remains constant within each of the plurality of stages, a peak value of a waveform of the unidirectional pulse output current in the second stage is less than that of a waveform of the unidirectional pulse output current in the first stage.

21. The mobile terminal according to any one of claims 18-20, wherein, the communication control circuit is further configured to:

communicate with the adapter to determine a charging voltage corresponding to the quick charging mode, under a situation of determining to charge the battery in the quick charging mode; and

receive a unidirectional pulse output voltage from the adapter so as to perform a quick charge on the battery, wherein the unidirectional pulse output voltage is determined by the adapter according to the charging voltage corresponding to the quick charging mode.