CLAIMS

1. A parking charging method, performed by a parking charging system, wherein the method comprises:

obtaining, by an acquisition unit of a parking charging apparatus applied to the parking charging system, vehicle information of a parked vehicle in a parking space, wherein the vehicle information has a corresponding user account on a payment platform;

publishing, by a publishing unit of the parking charging apparatus, a vehicle parking record to a blockchain network by using a first blockchain node corresponding to the parking charging system in the blockchain network, so that the vehicle parking record is recorded in a blockchain ledger, wherein the vehicle parking record comprises parking duration of the parked vehicle in the parking space; and

performing, by an implementation unit of the parking charging apparatus, an asset transfer operation related to the payment platform based on the vehicle parking record each time the parking duration reaches a first predetermined duration, so as to charge an asset corresponding to the first predetermined duration by sending an asset transfer request to the payment platform, wherein the asset transfer request includes a transaction serial number of the vehicle parking record in the blockchain network and a payment amount, wherein the payment platform searches the blockchain ledger based on the transaction serial number to determine authenticity and validity of the vehicle parking record, and to perform verification on the vehicle parking record, wherein the payment platform verifies whether the payment amount matches the parking duration in the vehicle parking record based on a predefined charging criterion, so as to complete the asset transfer operation only when the payment amount matches the parking duration.

2. The method according to claim 1, wherein the obtaining vehicle information of the parked vehicle in the parking space comprises:

performing, by the acquisition unit, an information acquisition operation at the parking space by using a first Internet of Things device associated with the parking charging system; and

determining, by the acquisition unit, the vehicle information of the parked vehicle based on information obtained by the first Internet of Things device.

3. The method according to claim 2, wherein the first Internet of Things device is dedicated to the parking space; or the first Internet of Things device is used for the parking space and at least one other parking space.

4. The method according to claim 2, wherein the first Internet of Things device comprises at least one of the following: a monitoring device, an RFID reader, a Bluetooth device, an optical sensor, and a signal receiver.

5. The method according to claim 2, wherein the performing an information acquisition operation at the parking space by using a first Internet of Things device associated with the parking charging system comprises:

when it is determined that there is a parked vehicle in the parking space by using the first Internet of Things device, further performing an information acquisition operation on the parked vehicle by using the first Internet of Things device; or

when it is determined that there is a parked vehicle in the parking space by using a second Internet of Things device associated with the parking charging system, further performing an information acquisition operation on the parked vehicle by using the first Internet of Things device.

6. The method according to claim 1, wherein the performing the asset transfer operation related to the payment platform based on the vehicle parking record each time the parking duration reaches first predetermined duration comprises:

each time the parking duration reaches the first predetermined duration, initiating, by the implementation unit, an asset charging request for the vehicle information to the payment platform, wherein the asset charging request comprises the transaction serial number of the vehicle parking record; and

charging, by the implementation unit, an asset transferred by the payment platform from the user account; or when a credit limit of the user account is not exceeded, charging a credit asset related to the user account and transferred by the payment platform.

7. The method according to claim 1, wherein the performing the asset transfer operation

related to the payment platform based on the vehicle parking record each time the parking duration reaches first predetermined duration comprises:

each time the parking duration reaches the first predetermined duration, initiating, by the implementation unit, a contract operation used for asset transfer by using the first blockchain node, wherein a validation condition of the contract operation comprises that the parking duration reaches the first predetermined duration; and

after the contract operation takes effect, receiving, by the implementation unit, by using the first blockchain node, a blockchain asset corresponding to the first predetermined duration and transferred by a second blockchain node corresponding to the payment platform in the blockchain network, wherein an offchain asset equivalent to the blockchain asset is deducted from the user account by the payment platform.

8. The method according to claim 1, wherein the performing the asset transfer operation related to the payment platform based on the vehicle parking record each time the parking duration reaches the first predetermined duration comprises:

when the parking duration reaches the first predetermined duration, performing, by the implementation unit, the asset transfer operation related to the payment platform based on the vehicle parking record; and

after the asset corresponding to the first predetermined duration is charged, resetting, by the implementation unit, the parking duration to recalculate the parking duration.

9. The method according to claim 1, wherein the vehicle parking record further comprises total parking duration of the parked vehicle in a parking lot in which the parking space is located, so that the asset corresponding to the first predetermined duration satisfies a charging criterion corresponding to a duration range within which the total parking duration falls.

10. The method according to claim 9, further comprising:

resetting, by a resetting unit of the parking charging apparatus, the total parking duration when the parked vehicle drives away from the parking space; or

resetting, by the resetting unit, the total parking duration when the parked vehicle drives away from the parking space and is not parked in any parking space in the parking lot within second

predetermined duration; or

resetting, by the resetting unit, the total parking duration when the parked vehicle drives away from the parking lot.

11. The method according to claim 1, further comprising:

when an entering vehicle drives to an entrance of a parking lot in which the parking space is located, initiating, by a querying unit of the parking charging apparatus, a query request to the payment platform based on vehicle information of the entering vehicle; and

when it is determined that a user account corresponding to the vehicle information of the entering vehicle exists on the payment platform, allowing, by a control unit of the parking charging apparatus, the entering vehicle to pass, so that the entering vehicle enters the parking lot; otherwise, refusing, by the control unit, the entering vehicle to pass.

12. A parking charging method, performed by a parking charging system, wherein the method comprises:

obtaining, by an acquisition unit of a parking charging apparatus applied to the parking charging system, vehicle information of a parked vehicle in a parking space, wherein the vehicle information has a corresponding user account on a payment platform;

publishing, by a publishing unit of the parking charging apparatus, a vehicle parking record to a blockchain network by using a first blockchain node corresponding to the parking charging system in the blockchain network, so that the vehicle parking record is recorded in a blockchain ledger, wherein the vehicle parking record comprises parking duration of the parked vehicle in the parking space; and

when it is detected that the parked vehicle drives away from the parking space, performing, by an implementation unit of the parking charging apparatus, an asset transfer operation related to the payment platform based on the vehicle parking record, so as to charge an asset corresponding to the parking duration by sending an asset transfer request to the payment platform, wherein the asset transfer request includes a transaction serial number of the vehicle parking record in the blockchain network and a payment amount, wherein the payment platform searches the blockchain ledger based on the transaction serial number to determine authenticity and validity of the vehicle parking record, and to perform verification on the vehicle parking record, wherein the payment

platform verifies whether the payment amount matches the parking duration in the vehicle parking record based on a predefined charging criterion, so as to complete the asset transfer operation only when the payment amount matches the parking duration.

13. A parking charging apparatus, applied to a parking charging system, wherein the apparatus comprises:

an acquisition unit, configured to obtain vehicle information of a parked vehicle in a parking space, wherein the vehicle information has a corresponding user account on a payment platform;

a publishing unit, configured to publish a vehicle parking record to a blockchain network by using a first blockchain node corresponding to the parking charging system in the blockchain network, so that the vehicle parking record is recorded in a blockchain ledger, wherein the vehicle parking record comprises parking duration of the parked vehicle in the parking space; and

an implementation unit, configured to perform an asset transfer operation related to the payment platform based on the vehicle parking record each time the parking duration reaches first predetermined duration, so as to charge an asset corresponding to the first predetermined duration by sending an asset transfer request to the payment platform, wherein the asset transfer request includes a transaction serial number of the vehicle parking record in the blockchain network and a payment amount, wherein the payment platform searches the blockchain ledger based on the transaction serial number to determine authenticity and validity of the vehicle parking record, and to perform verification on the vehicle parking record, wherein the payment platform verifies whether the payment amount matches the parking duration in the vehicle parking record based on a predefined charging criterion, so as to complete the asset transfer operation only when the payment amount matches the parking duration.

14. The apparatus according to claim 13, wherein the acquisition unit is specifically configured to:

perform an information acquisition operation at the parking space by using a first Internet of Things device associated with the parking charging system; and

determine the vehicle information of the parked vehicle based on information obtained by the first Internet of Things device.

15. The apparatus according to claim 14, wherein the first Internet of Things device is dedicated to the parking space; or the first Internet of Things device is used for the parking space and at least one other parking space.

16. The apparatus according to claim 14, wherein the first Internet of Things device comprises at least one of the following: a monitoring device, an RFID reader, a Bluetooth device, an optical sensor, and a signal receiver.

17. The apparatus according to claim 14, wherein the acquisition unit is specifically configured to:

when it is determined that the parked vehicle is in the parking space by using the first Internet of Things device, further perform the information acquisition operation on the parked vehicle by using the first Internet of Things device; or

when it is determined that the parked vehicle is in the parking space by using a second Internet of Things device associated with the parking charging system, further perform the information acquisition operation on the parked vehicle by using the first Internet of Things device.

18. The apparatus according to claim 13, wherein the implementation unit is specifically configured to:

each time the parking duration reaches the first predetermined duration, initiate an asset charging request for the vehicle information to the payment platform, wherein the asset charging request comprises the transaction serial number of the vehicle parking record; and

charge an asset transferred by the payment platform from the user account; or when a credit limit of the user account is not exceeded, charge a credit asset related to the user account and transferred by the payment platform.

19. The apparatus according to claim 13, wherein the implementation unit is specifically configured to:

each time the parking duration reaches the first predetermined duration, initiate a contract operation used for asset transfer by using the first blockchain node, wherein a validation condition of the contract operation comprises that the parking duration reaches the first predetermined

duration; and

after the contract operation takes effect, receive, by using the first blockchain node, a blockchain asset corresponding to the first predetermined duration and transferred by a second blockchain node corresponding to the payment platform in the blockchain network, wherein an offchain asset equivalent to the blockchain asset is deducted from the user account by the payment platform.

20. The apparatus according to claim 13, wherein the implementation unit is specifically configured to:

when the parking duration reaches the first predetermined duration, perform the asset transfer operation related to the payment platform based on the vehicle parking record; and

after the asset corresponding to the first predetermined duration is charged, reset the parking duration to recalculate the parking duration.

21. The apparatus according to claim 13, wherein the vehicle parking record further comprises total parking duration of the parked vehicle in a parking lot in which the parking space is located, so that the asset corresponding to the first predetermined duration satisfies a charging criterion corresponding to a duration range within which the total parking duration falls.

22. The apparatus according to claim 21, further comprising:

a resetting unit, configured to reset the total parking duration when the parked vehicle drives away from the parking space; or reset the total parking duration when the parked vehicle drives away from the parking space and is not parked in any parking space in the parking lot within second predetermined duration; or reset the total parking duration when the parked vehicle drives away from the parking lot.

23. The apparatus according to claim 13, further comprising:

a querying unit, configured to: when any vehicle drives to an entrance of a parking lot in which the parking space is located, initiate a query request to the payment platform based on vehicle information of the any vehicle; and

a control unit, configured to: when it is determined that a user account corresponding to the

vehicle information of the any vehicle exists on the payment platform, allow the any vehicle to pass, so that the any vehicle enters the parking lot; otherwise, refuse the any vehicle to pass.

24. An electronic device, comprising:

a processor; and

a memory, configured to store a processor-executable instruction, wherein

the processor is configured to perform the method according to any one of claims 1 to 12.