IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
NOOK et al.
Appl. No.: 16/450,422
Filing Date: June 24, 2019
Exam: DIAO
Art Unit: 2859
Conf.: 1008
Title: **PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF**

AMENDMENT AND RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22315

Dear Commissioner:

This paper is submitted in response to the Non-Final Office Action dated June 25, 2021, along with a one-month extension of time, making a response due on or before October 25, 2021. Accordingly, this paper is timely filed.

Amendments to the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A jump starting apparatus configured for boosting or charging a depleted or discharged battery having a positive polarity battery terminal and a negative polarity battery terminal, the jump starting apparatus comprising:

a power supply;

a positive polarity battery terminal connector configured for connecting the jump starting apparatus to the positive polarity battery terminal of the depleted or discharged battery;

a negative polarity battery terminal connector configured for connecting the jump starting apparatus to the negative polarity battery terminal of the depleted or discharged battery;

a power switch or circuit configured to turn on power from the power supply to the positive and negative polarity battery terminal connectors;

a control system or circuit connected to and controlling the power switch, the control system or circuit configured to detect whether the positive and negative polarity battery terminal connectors have a proper <u>or improper</u> connection with the positive and negative polarity battery terminals of the depleted or discharged battery prior to turning on the power switch or circuit;

a USB input charge circuit connected to the power supply, <u>the USB input charge circuit comprising a DC/DC converter,</u> the USB input charge circuit configured for

converting power from a USB charger to increase charge voltage ~~and current~~ for charging the power supply; and

a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector [[to]] and the USB input charge circuit to the power supply.

2. (Previously presented) The apparatus of claim 1, wherein the power supply comprises a lithium ion battery.

3. (Previously presented) The apparatus of claim 2, wherein the lithium ion battery comprises a battery pack of multiple lithium ion batteries.

4. (Previously presented) The apparatus of claim 1, wherein the power switch comprises one or more FETs.

5. (Previously presented) The apparatus of claim 1, wherein the control system or circuit is configured for detecting a presence of the depleted or discharged battery connected between the positive and negative polarity battery terminal connectors and detecting a proper polarity connection of the positive and negative polarity terminals with the positive and negative polarity battery terminal connectors.

6. (Previously presented) The apparatus of claim 1, further comprising a plurality of power diodes coupled between the positive and negative battery terminal connectors and the power supply to prevent back-charging of the power supply from an electrical system connected to the positive and negative battery terminal connectors.

7. (Previously presented) The apparatus of claim 1, further comprising a temperature sensor configured to detect temperature of the power supply and to provide a temperature signal to a microcontroller.

8. (Previously presented) The apparatus of claim 1, further comprising a voltage measurement circuit configured to measure output voltage of the power supply and to provide a voltage measurement signal to a microcontroller.

9. (Previously presented) The apparatus of claim 1, further comprising a voltage regulator configured to convert output voltage of the power supply to a voltage level appropriate to provide operating power to internal components of the jump starting apparatus.

10. (Previously presented) The apparatus of claim 1, further comprising a USB output port configured to provide charging power from the power supply to a USB-chargeable device.

11. (Cancelled)

12. (Original) The apparatus of claim 1, further comprising a flashlight circuit configured to provide a source of light to a user.

13. (Previously presented) The apparatus of claim 12, wherein the source of light is at least one LED.

14. (Previously presented) The apparatus of claim 13, wherein the control system or circuit is configured to control the at least one LED to provide a visual alarm indicating an emergency situation.

15. (Previously presented) The apparatus of claim 1, further comprising a plurality of visual indicators configured to display remaining capacity status of the power supply.

16. (Previously presented) The apparatus of claim 15, wherein the plurality of visual indicators comprises a plurality of LEDs providing output light of different colors.

17. (Previously presented) The apparatus of claim 1, further comprising a visual indicator configured to warn a user when the depleted or discharged battery is connected to the jump starting apparatus with reverse polarity.

18. (Previously presented) The apparatus of claim 1, further comprising separate visual indicators configured to display a power on status of the jump starting apparatus, and a jump start boost power status of power supplied to an output device.

19. (Currently amended) The apparatus of claim 1, further comprising a manual override switch configured to activate a manual override mode to enable a user to connect jump start power to ~~an output port~~ the depleted or discharged vehicle battery when [[the]] a vehicle battery isolation sensor is unable to detect presence of [[a]] the vehicle battery.

20. (Previously presented) The apparatus of claim 19, wherein the control system or circuit is configured to detect actuation of the manual override switch for at least a predetermined period of time before activation of the manual override mode.

21. (Previously presented) The apparatus of claim 1, further comprising a jumper cable device, the jumper cable device comprising a plug configured to plug into an output port of the jump starting apparatus, a pair of battery cables integrated with the plug at one end of the pair of cables, and the positive and negative battery terminal connectors connected to an opposite end of the pair of battery cables.

22. (Previously presented) The apparatus of claim 21, wherein the jumper cable device further comprises a pair of ring terminals configured to respectively connect the pair of cables at the opposite end to the respective positive and negative battery terminals of the depleted or discharged battery, or connect to respective positive and negative battery clamps.

23. (Previously presented) The apparatus of claim 21, wherein the output port and the plug are dimensioned so that the plug will fit into the output port only in one specific orientation.

24.-28. (Cancelled)

29. (Currently amended) A jump starting apparatus for boosting or charging a depleted or discharged battery having a positive polarity battery terminal and a negative polarity battery terminal, the jump starting apparatus comprising:

a power supply;

a positive polarity battery terminal connector configured for connecting the jump starting apparatus to the positive polarity terminal of the depleted or discharged battery;

a negative polarity battery terminal connector configured for connecting the jump starting apparatus to the negative polarity terminal of the depleted or discharged battery;

a battery presence sensor or circuit connected in ~~a first~~ circuit with the positive polarity battery terminal connector and the negative polarity battery terminal connector;

a reverse polarity sensor or circuit connected in ~~a second~~ circuit with the positive polarity battery terminal connector and the negative polarity terminal connector;

a power switch or circuit connected or connectable in circuit ~~between~~ with the power supply and the positive and negative polarity battery terminal connectors;

a microcontroller configured to receive input signals provided by the battery presence sensor or circuit and the reverse polarity sensor or circuit, the microcontroller configured to provide an output signal to control the power switch,

a USB input charge circuit connected to the power supply, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage ~~and current~~ for charging the power supply; and

a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector [[to]] and the USB input charge circuit to the power supply.

30. (Currently amended) A jump starting device for boosting or charging a depleted or discharged battery having a positive polarity battery terminal and a negative polarity battery terminal, the jump starter device comprising:

a power supply;

a positive battery terminal connector for connecting the jump starter device to the positive battery terminal of the depleted or discharged battery;

a negative battery terminal connector for connecting the jump starter device to the negative battery terminal of the depleted or discharged battery;

a power switch or circuit connected in circuit with the power supply and the positive and negative battery terminal connectors, the power switch configured to turn power on or off from the power supply to the depleted or discharged battery when the positive and negative battery terminal connectors are properly connected to the positive and negative battery connectors;

a power switch control system or circuit connected to and controlling the power switch, the power switch control system or circuit configured to detect presence of the

depleted or discharged battery when connected between the positive and negative battery terminal connectors and to detect polarity of the depleted or discharged battery when connected between the positive and negative battery terminal connectors;

a USB input charge circuit connected to the power supply, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage ~~and current~~ for charging the power supply; and

a USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector [[to]] and the USB input charge circuit to the power supply.

31. (Currently amended) The device according to claim 30, wherein the power switch control system or circuit does not switch on the power supply to connect the power supply to the depleted or discharged battery when the power switch control system or circuit detects either that (i) the depleted or discharged battery is absent or not connected between the positive and negative battery connectors, and (ii) the depleted or discharged battery is not connected with a proper polarity between the positive and negative battery ~~terminals~~ terminal connectors.

32. (Previously presented) The device according to claim 30, wherein the power switch control system or circuit is configured to detect presence of the depleted or discharged battery when connected between the positive and negative battery connectors and to detect polarity of the depleted or discharged battery when connected between the positive and negative battery connectors prior to turning

power on from the power supply to the depleted or discharged battery.

33. (Previously presented) The device according to claim 30, wherein the power switch control system or circuit comprises a microcontroller configured for providing an output controlling the power switch.

34. (Previously presented) The device according to claim 33, wherein the microcontroller receives input from one or more sensors configured to detect presence of the depleted or discharged battery when connected between the positive and negative battery connectors and to detect polarity of the depleted or discharged battery when connected between the positive and negative battery connectors.

35. (Currently amended) The device according to claim 34, wherein the one or more sensors includes one sensor configured to detect presence of the depleted or discharged battery when connected between the positive and negative battery terminal connectors, and another sensor configured to detect ~~proper~~ polarity of the depleted or discharged battery when connected between the positive and negative battery terminal connectors.

36. (Previously presented) The device according to claim 35, wherein the one or more sensors comprises one or more sensing circuits.

37. (Currently amended) The device according to claim 33, wherein the microcontroller is configured to turn on the power switch to provide power from the power supply to the depleted or discharged battery only when the depleted or discharged battery is determined by the microcontroller to be present and properly or improperly connected to the jump starting apparatus ~~with proper polarity~~.

38. (Currently amended) A jump starting device for boosting or charging a depleted or discharged battery having a positive polarity battery terminal and a negative polarity battery terminal, the jump starter device comprising:

a power source;

a positive battery terminal connector for connecting the jump starter device to the positive battery terminal of the depleted or discharged battery;

a negative battery terminal connector for connecting the jump starter device to the negative battery terminal of the depleted or discharged battery;

a power switch or circuit connected in circuit with the power source and the positive and negative battery terminal connectors, the power switch configured to turn power on or off from the power supply to the depleted or discharged battery when connected to the positive and negative battery connectors;

a power switch control system or circuit connected to and controlling the power switch, the power switch control system or circuit configured to detect presence of the depleted or discharged battery when connected between the positive and negative battery terminal connectors and to detect proper or improper polarity of the depleted or discharged battery when connected between the positive and negative battery terminal

connectors;

a USB input charge circuit connected to the power supply, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage ~~and current~~ for charging the power supply; and

a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector [[to]] and the USB input charge circuit to the power source.

39. (Currently amended) The apparatus according to claim [[1]] 38, further comprising a DC-DC converter connected to the USB input charge circuit.

40. (Currently amended) The apparatus according to claim [[39]] 1, wherein the DC-DC converter is configured for up-converting the input voltage received by the USB input connector.

41. (Previously presented) The apparatus according to claim 40, wherein the input voltage is 5V that is up-converted to 12.4 VDC for charging the power supply.

42. (Previously presented) The apparatus according to claim 39, wherein the USB input charge circuit is configured to turn on and off the DC-DC converter by an output of the control system or circuit comprising a microcontroller.

43. (Previously presented) The apparatus according to claim 1, further comprising a USB output circuit connected to the power supply to provide a USB output port for charging portable electronic devices from the power supply, and a USB output connector connected to the USB output circuit.

44. (Previously presented) The apparatus according to claim 43, further comprising a USB output control circuit connected to a microcontroller, the USB output control circuit is configured to allow the USB output port to be turned on and off by software control to prevent the internal lithium battery from getting too low in capacity.

45. (Previously presented) The apparatus according to claim 43, wherein the USB output connector includes a voltage divider for enabling charge to certain electronic devices.

46. (Previously presented) The apparatus according to claim 1, including an operation indicator LED to provide visual indication of the power supply capacity status.

47. (Previously presented) The apparatus according to claim 1, including an operation indicator LED to provide visual indication of the switch activation status indicating power is being provided to the depleted or discharged battery.

48. (Currently amended) The apparatus according to claim 1, wherein the proper or improper connection with the positive and negative polarity battery ~~terminals~~ terminal connectors of the depleted or discharged battery prior to turning on the power switch or circuit is a proper or improper polarity connection.

49. (Previously presented) The apparatus according to claim 1, wherein the control system or circuit comprises one or more sensors connected to a microprocessor for determining whether the depleted or discharged battery is present and connected between the positive and negative polarity battery terminal connectors.

50. (Currently amended) The apparatus according to claim 1, wherein the control system or circuit comprises one or more sensors connected to a microprocessor for determining whether the depleted or discharged battery is properly or improperly connected to the positive and negative polarity battery terminal connectors ~~with proper polarity~~.

51. (Currently amended) The apparatus according to claim 1, wherein the control system or circuit comprises one or more sensors connected to a microprocessor for determining whether the depleted or discharged battery is present and connected between the positive and negative polarity battery terminal connectors and determining whether the depleted or discharged battery is properly or improperly connected to the positive and negative polarity battery terminal connectors ~~with proper polarity~~.

52. (New) The apparatus according to claim 1, wherein the DC-DC converter can be turned on and off by the USB input charge circuit.

53. (New) A jump starting apparatus configured for boosting or charging a depleted or discharged battery having a positive polarity battery terminal and a negative polarity battery terminal, the jump starting apparatus comprising:

a power supply;

a positive polarity battery terminal connector configured for connecting the jump starting apparatus to the positive polarity battery terminal of the depleted or discharged battery;

a negative polarity battery terminal connector configured for connecting the jump starting apparatus to the negative polarity battery terminal of the depleted or discharged battery;

a power switch or circuit configured to turn on power from the power supply to the positive and negative polarity battery terminal connectors;

a control system or circuit connected to and controlling the power switch, the control system or circuit comprising a microcontroller, the control system or circuit configured to detect whether the positive and negative polarity battery terminal connectors have a proper or improper connection with the positive and negative polarity battery terminals of the depleted or discharged battery prior to turning on the power switch;

a USB input connector configured for removably connecting to an external USB charger and providing charge input from the USB charger through the USB input

connector to the power supply; and

a USB input charge circuit connecting the USB connector to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from the external USB charger to charge voltage and current for charging the power supply,

wherein the DC-DC converter can be turned on and off by an output of the microcontroller.

54. (New) The apparatus according to claim 53, wherein the DC-DC converter can be turned on and off via the USB input charge circuit.

Remarks

Upon entry of the above amendments, claims 1-23 and 29-51 are pending in the present application prior to entry of the above amendments.

Claims 11 and 24-28 have previously been cancelled without prejudice or disclaimer of the subject matter contained therein.

Claims 1, 19, 29-31, 35, 37-40, 48, 50, and 51 have been amended, and claims 52-54 are newly added. No new matter has been added.

Applicant, by amending any claims and/or canceling any claims, makes no admission as to the validity of any rejection made by the Examiner against any of these claims. Applicant reserves the right to reassert any of the claims canceled or the original or previous claim scope of any claim amended, during the prosecution of this application, in a continuing application. Further, Applicant acknowledges but does not acquiesce or agree with any Examiner assertion regarding this application and expressly reserves the right to rebut or otherwise address any such assertion.

In view of the following, further and favorable consideration is respectfully requested.

I. Rejection under 35 USC § 103, beginning at page 3

Claims 1-3,5,7-11,12-15,17-21,23,31-41,43,46-51 are rejected under 35 U.S.C. 103 as being unpatentable over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Xinfang USPAT 9,506,446 (Exhibit 1008 IPR2020-01387) and in further view of Tinaphong US 2011/0175461.

The Office Action asserts that "[I]t would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to have incorporate the teachings of Xinfang into the apparatus of Richardson so as to provide additional convenience to users of using another commonly used power input for charging the jump starter device. .. It would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to modify the apparatus of Richardson by incorporating a USB input charge circuit connected to the power supply, the USB input charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector to the USB input charge circuit, as recited, so as to provide both 5 volt DC signal provided on the USB charger connector from an external source to a 3.7 volt DC signal on the output of the second DC-to-DC converter circuit which in turn is provided to the positive side of a lithium polymer battery, as per the teachings of Tinaphong **([0040])**. Having a USB input connector provide connection to an external source of voltage (preferably, about 5 volts DC), to charge the internal second storage device polymer battery. Furthermore, having a USB input charge circuit connected to the power supply, the USB input charge circuit configured for converting power from a USB

charger to charge voltage and current for charging the power supply, will also enable an external electronic or electrical device, such as a cellular phone, PDA, MP3 player, camera or the like, to be connected to the USB output connector of the energy harvesting circuit using a standard USB cable so that the energy harvesting circuit of the present invention may charge the batteries of the external electronic device or power the external electronic device connected to the energy harvesting circuit by the user, as per the teachings of Tinaphong **([0042])**."

Regarding motivation to modify properly combined references, **MPEP 2143.01** states that a proposed modification cannot render the prior art unsatisfactory for its intended purpose. If it does, then there is no suggestion or motivation to make the proposed modification. Further, the proposed modification cannot change the principle operation of a reference.

Regarding *teaching away*, **MPEP 2141.02** states that prior art must be considered in its entirety, including disclosures that *teach away* from the claims. *See* also **MPEP 2145(X)(D)**.

In view of the following, this rejection is respectfully traversed.

Richardson discloses a "method and apparatus [that] provides supplemental power to an engine" (see Abstract).

Richardson discloses "a portable power source for a motor vehicle and, more particularly, to a method and apparatus to provide supplemental power to start internal combustion and turbine engines" (see paragraph [0001]).

Richardson discloses that the "present invention monitors the voltage of the battery of the vehicle to be jump started and the current delivered by the jump starter

batteries to determine if a proper connection has been established and to provide fault monitoring. For safety purposes, only if the proper polarity is detected can the system operate. The voltage is monitored to determine open circuit, disconnected conductive clamps, shunt cable fault, and solenoid fault conditions. The current through the shunt cable is monitored to determine if there is a battery explosion risk, and for excessive current conditions presenting an overheating condition, which may result in fire. The system includes an internal battery to provide the power to the battery of the vehicle to be jump started" (see paragraph [0006]).

Thus, ***Richardson*** discloses detecting proper polarity.

Richardson does not disclose a USB input connector and a USB input charge circuit, let alone the claimed subject matter, including "a USB input charge circuit connected to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector and the USB input charge circuit to the power supply."

Xinfang discloses "a mobile power bank capable of charging electronic devices, jump starting an ignition system of a vehicle with a weak or dead battery" (see column 1, lines 19 to 22.

Xinfang discloses a charging port 34 (i.e. a non-USB female barrel jack receiver acting as a power input connector) and a USB output module 36 comprising two USB interfaces, including a first USB interface 38 and a second USB interface 40 (see column

4, lines 36 to 44 and FIGS. 1, 2, and 6).

Importantly, is noted that the USB output module 36 comprises the first USB interface 38 and the second USB interface 40, which are both output ports (i.e. not input ports) for charging and/or powering external devices (see column 4, line 59 to column 5, line 3). Specifically, ***Xinfang*** factually does not disclose a USB input port.

Xinfang disclose the "charging port 34 may be an AC or DC charging port and is connectable to an external charging circuit adaptor for charging the battery module 16. The charging port 34 may be connected to a 110V AC adaptor or a 12V DC adaptor to charge the battery" (see column 4, lines 52 to 56). The charging port 34 is connected to the charging module 52, which may include a constant current and constant voltage input circuit 60 to charge the battery module 16 (see column 6, lines 11 to 24).

Xinfang discloses a 110V external charging adaptor having a male barrel jack, as shown in FIGS. 3B and 3C.

Xinfang discloses that the "discharge module 54 is connected to the USB (Universal Serial Bus) output module 36. In an embodiment, the discharge module 54 includes a constant current and constant voltage output circuit 66, a discharge module over-discharge protection circuit 68, and a discharge module power test circuit 70. The constant current and constant voltage output circuit 66 is coupled to the USB output module 36, so that the first USB interface 38 and the second USB interface 40 maintain a constant charging current and constant voltage" (see column 6, line 25 to 34).

Thus, ***Xinfang*** discloses a female barrel type power input connector instead of a USB input port (i.e. non-USB type power input connector) for charging the battery module 16 and a USB output module 36 comprising two USB interfaces, including a first USB

interface 38 and a second USB interface 40 acting as two separate USB output connectors.

Xinfang does not disclose a USB input connector and a USB input charge circuit, let alone the claimed subject matter, including "a USB input charge circuit connected to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector and the USB input charge circuit to the power supply."

At paragraph 12 on page 6, the rejection asserts that "[I]t would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to have incorporate the teachings of Xinfang into the apparatus of Richardson so as to provide additional convenience to users of using another commonly use power input for charging the jump starter device.

However, both Richardson and Xinfang factually do not disclose a USB input connector and USB input charge circuit.

Specifically, again both ***Richardson and Xinfang*** do not disclose a USB input connector and USB input charge circuit, let alone the claimed subject matter, including "a USB input charge circuit connected to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB input

connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector and the USB input charge circuit to the power supply."

Tinaphong discloses an "energy harvesting circuit [that] includes one or more broadband or narrow band antennas to detect WIFI (wireless fidelity) or other RF (radio frequency) signals. The signals are rectified and voltage multiplied, and the resultant DC voltage is provided to a power management circuit. The output of the power management circuit charges a lithium battery or other storage device within the energy harvesting circuit. The energy stored in the battery or storage device is provided through a DC/DC converter circuit to a USB output connector to power or recharge the batteries of an external electronic device connected to the USB output connector of the energy harvesting circuit" (see Abstract).

The apparatus of ***Tinaphong*** is an energy harvesting apparatus, and not disclosed as being a jump starter or for use as a jump starting apparatus. Further, the apparatus of ***Tinaphong*** cannot be practically used as a jump starting device due to the low voltage output (i.e. 5 volts) of the apparatus (see paragraph [0042]), which is too low to effectively provide power to a depleted or discharged 12V battery (e.g. the charging rate would be too slow to charge the 12V vehicle battery to jump start a vehicle). Thus, ***Tinaphong*** is clearly non-analogous prior art, and one skilled in the art would not turn to ***Tinaphong*** to attempt to modify and/or improve the jump starter of ***Richardson***.

Furthermore, ***Tinaphong*** in fact teaches away from attempting to modify the jump starter of ***Richardson*** with the USB input connector and USB input charge circuit of ***Tinaphong***. Specifically, ***Tinaphong*** teaches applying a second stage DC-to-DC

converter circuit 22 acting as a low drop out, step down voltage converter/regulator to convert the 5 volt DC signal provided on the USB charger input connector 24 from an external source to a 3.7 volt DC signal on the output of the second DC-to-DC converter circuit used to charge the lithium polymer battery 18 (see paragraph [0040]).

Dropping down the voltage as taught by ***Tinaphong*** is the exact opposite and wrong direction to the requirement of stepping up or increasing the charging voltage to charge the internal lithium polymer battery 18 of ***Tinaphong*** to at least 12 V so that the apparatus could be modified to become or be used as a jump starter as asserted in this rejection. Applicant disagrees with the rejection in attempting to use the teaching of ***Tinaphong*** to further modify the combination of ***Richardson and Xinfang***, which is already defective, since again both ***Richardson and Xinfang*** do not disclose a USB input connector and USB input charge circuit.

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang*** **and** ***Tinaphong***, taken alone or together, renders the presently claimed subject matter obvious within the meaning of 35 USC § 103. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

II. Rejection under 35 USC § 103, beginning on page 22

a. Claim 4 is unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Xinfang USPAT 9,506,446 (Exhibit 1008 IPR2020-01387) and Tinaphong and in further view of Krieger et al., (Krieger) US 2004/0130298.

The Examiner states that "[i]t would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to have incorporated the switch of Krieger into the jump starter apparatus of Richardson as modified by Xinfang

and Tinaphong because of numerous advantages such as their fast switching speeds, their low loss, and are preferably high power, and very low on-resistance types."

In view of the following, this rejection is respectfully traversed.

Regarding motivation to modify properly combined references, **MPEP 2143.01** states that a proposed modification cannot render the prior art unsatisfactory for its intended purpose. If it does, then there is no suggestion or motivation to make the proposed modification. Further, the proposed modification cannot change the principle operation of a reference.

Regarding *teaching away*, **MPEP 2141.02** states that prior art must be considered in its entirety, including disclosures that *teach away* from the claims. *See* also **MPEP 2145(X)(D)**.

Krieger is only cited in the rejection for the purpose of disclosing a power switch comprising one or more FETs, and does not add anything relevant to ***Richardson***, ***Xinfang, and Tinaphong*** to teach or suggest the base claimed subject matter, including "a USB input charge circuit connected to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector and the USB input charge circuit to the power supply."

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang***, ***Tinaphong***, and ***Krieger***, taken alone or together, renders the presently claimed subject matter obvious within the meaning of 35 USC § 103. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

III. Rejection under 35 USC § 103, beginning on page 23

a. Claim 6 is unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Xinfang USPAT 9,506,446 (Exhibit 1008 IPR2020-01387) and Tinaphong in further view of Wanzong et al., (Wanzong) USPAT 5,319,298 (all cited by Applicants).

The Examiner states that "[i]t would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to have included a plurality of power diodes like the single power diode disclosed by Wanzong into the apparatus of Richardson as modified by Xinfang and Tinaphong to prevent back-charging and damage to the charging circuit during or after charging process."

In view of the following, this rejection is respectfully traversed.

Regarding motivation to modify properly combined references, **MPEP 2143.01** states that a proposed modification cannot render the prior art unsatisfactory for its intended purpose. If it does, then there is no suggestion or motivation to make the proposed modification. Further, the proposed modification cannot change the principle operation of a reference.

Regarding *teaching away*, **MPEP 2141.02** states that prior art must be considered in its entirety, including disclosures that *teach away* from the claims. *See* also **MPEP 2145(X)(D)**.

Wanzong is only cited in this rejection for the purpose of disclosing an isolation diode and does not add anything relevant to ***Richardson***, ***Xinfang, and Tinaphong*** to teach or suggest the base claimed subject matter, including "a USB input charge circuit connected to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector and the USB input charge circuit to the power supply."

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang***, ***Tinaphong***, and ***Wanzong***, taken alone or together, renders the presently claimed subject matter obvious within the meaning of 35 USC § 103. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

IV. Rejection under 35 USC § 103, beginning on page 24

a. Claim 16 is unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Xinfang USPAT 9,506,446 (Exhibit 1008 IPR2020-01387) and Tinaphong in further view of Baxter (Exhibit 1011 IPR2020-00944)(all cited by Applicant).

The Examiner states that "[i]t would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to incorporate LEDs providing output light of different colors of Baxter in the Richardson's apparatus as modified by Xinfang and Tinaphong to indicate conditions including the capacity status of the internal power supply, since using different lights of different colors enables a user to

be readily notified of particular conditions very clearly and easily."

In view of the following, this rejection is respectfully traversed.

Regarding motivation to modify properly combined references, **MPEP 2143.01** states that a proposed modification cannot render the prior art unsatisfactory for its intended purpose. If it does, then there is no suggestion or motivation to make the proposed modification. Further, the proposed modification cannot change the principle operation of a reference.

Regarding *teaching away*, **MPEP 2141.02** states that prior art must be considered in its entirety, including disclosures that *teach away* from the claims. *See* also **MPEP 2145(X)(D)**.

Baxter is only cited in this rejection for the purpose of disclosing a plurality of LEDs providing output of different colors to indicate a variety of conditions, and does not add anything relevant to ***Richardson***, ***Xinfang, and Tinaphong*** to teach or suggest the base claimed subject matter, including "a USB input charge circuit connected to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector and the USB input charge circuit to the power supply."

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang, Tinaphong***, and ***Baxter***, taken alone or together, renders the presently claimed subject matter obvious within the meaning of 35 USC § 103. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

IV. Rejection under 35 USC § 103, beginning on page 25

a. Claim 22 is unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Xinfang USPAT 9,506,446 (Exhibit 1008 IPR2020-01387) and Tinaphong US 2011/0175461 and in further view of Richardet Jr. USPAT 8,172,603 (Exhibit 1014 IPR2020-00944).

The Examiner states that "[i]t would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to combine Richardet's cable system with ring terminals in Richardson's jump starter as modified by Xinfang and Tinaphong as another advantageous way of connecting cabling to a battery. A POSITA would have been particularly motivated to use Richardet's cabling system to provide a secure and stable connection to a motor vehicle battery in a way that is simple and quick for an average user, as suggested by Richardet**(col. 1, lines 59-65)**."

In view of the following, this rejection is respectfully traversed.

Regarding motivation to modify properly combined references, **MPEP 2143.01** states that a proposed modification cannot render the prior art unsatisfactory for its intended purpose. If it does, then there is no suggestion or motivation to make the proposed modification. Further, the proposed modification cannot change the principle operation of a reference.

Regarding *teaching away*, **MPEP 2141.02** states that prior art must be considered in its entirety, including disclosures that *teach away* from the claims. *See* also **MPEP 2145(X)(D)**.

Richardet Jr. is only cited in this rejection for the purpose of disclosing a pair of ring terminals, and does not add anything relevant to ***Richardson***, ***Xinfang, and Tinaphong*** to teach or suggest the base claimed subject matter, including "a USB input charge circuit connected to the power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for converting power from a USB charger to increase charge voltage for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB input connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB input connector and the USB input charge circuit to the power supply."

In view of the foregoing, it is submitted that nothing in ***Richardson, Xinfang, Tinaphong,*** and ***Richardet Jr.***, taken alone or together, renders the presently claimed subject matter obvious within the meaning of 35 USC § 103. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Allowable Subject Matter

Claims 42, and 44-45 would be allowable if rewritten to overcome the rejections(s) under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Applicant acknowledges the allowable subject matter.

Conclusion

In view of the foregoing, Applicant submits that the application is in condition for immediate allowance. Early notice to that effect is earnestly solicited. The Examiner is invited to contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

Applicant petitions for a one-month extension of time.

In the event this paper is not timely filed, Applicant petitions for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 22-0585.

Respectfully submitted,

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Date: October 25, 2021

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