PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	
Examiner Name	
Attorney Docket Number	054985.000055-US04

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8493021	B2	2013-07-23	RICHARDSON et al.	
	2	4910628	A	1990-03-20	MINAGAWA et al.	
	3	7148580	B2	2006-12-12	SODEMANN et al.	
	4	8172603	B1	2012-05-08	RICHARD, Jr.	
	5	6822425	B2	2004-11-23	KRIEGER et al.	
	6	6147471	A	2000-11-14	HUNTER; ALTON G.	
	7	6054779	A	2000-04-25	ZUBKO; RONALD L.	
	8	6212054	B1	2001-04-03	CHAN; SING	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	
	Examiner Name	
	Attorney Docket Number	054985.000055-US04

	9	6362599	B1	2002-03-26	Turner et al.	
	10	6803743	B2	2004-10-12	George et al.	
	11	5965998		1999-10-12	Whiting et al.	
	12	4885524		1989-12-05	Wilburn	
	13	5083076		1992-01-21	Scott	
	14	6130519		2000-10-10	Whiting et al.	
	15	6262559		2001-07-17	Eggert et al.	
	16	5111130		1992-05-05	Bates	
	17	5189359		1993-02-23	Kronberg	
	18	5635817		1997-06-03	Shiska	
	19	5635818		1997-06-03	Quintero	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	
	Examiner Name	
	Attorney Docket Number	054985.000055-US04

	20	5793185		1998-08-11	PRELEC et al.	
	21	5795182		1998-08-18	JACOB	
	22	5921809		1999-07-13	FINK	
	23	6140796		2000-10-31	MARTIN et al.	
	24	6212054		2001-04-03	CHAN	
	25	6262492		2001-07-17	SHENG	
	26	6632103		2003-10-14	LIU	
	27	6756764		2004-06-29	SMITH et al.	
	28	7301303		2007-11-27	HULDEN	
	29	7872361		2011-01-18	MCFADDEN	
	30	8199024		2012-06-12	BAXTER et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2019-06-24
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	Examiner Name	
	Attorney Docket Number	054985.000055-US04

	31	8376775		2013-02-19	RINEHARDT	
	32	3933140	A	1976-01-20	GYNN; GEORGE E.	
	33	4041445	A	1977-08-09	CARTER; REID F.	
	34	4931731	A	1990-06-05	JENKS; WILLIAM C.	
	35	5486434	A	1996-01-23	AOYAMA; MASAHIKO	
	36	6648701	B2	2003-11-18	MOUISSIE; BOB	
	37	7749031	B2	2010-07-06	DETTER; GARY C	
	38	8076900	B1	2011-12-13	BROWN AUDLEY	
	39	6386907	A	2002-05-14	RUFFA	
	40	6426606	B1	2002-07-30	PURKEY	
	41	9506446	b2	2016-11-29	XINFANG	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
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	Examiner Name	
	Attorney Docket Number	054985.000055-US04

	42	9770992	B2	2017-09-26	NOOK et al.	
	43	D625265	S	2010-10-12	DUMELLE et al.	
	44	D649116	S	2011-11-22	NAKATSUKA	
	45	D689020	S	2013-09-03	DEMIRJIAN et al.	
	46	D726109	S	2015-04-07	NOOK et al.	
	47	D726114	S	2015-04-07	NOOK et al.	
	48	D726121	S	2015-04-07	NOOK et al.	
	49	D735665	S	2015-08-04	NOOK et al.	
	50	D746774	S	2016-01-05	NOOK et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	
	Examiner Name	
	Attorney Docket Number	054985.000055-US04

	1	20130154543	A1	2013-06-20	RICHARDSON et al.	
	2	20040130298	A1	2004-07-08	KRIEGER et al.	
	3	20020041174	A1	2002-04-11	PURKEY	
	4	20100301800	A1	2010-12-02	INSKEEP	
	5	20140159509	A1	2014-06-12	INSKEEP	
	6	20050110467	A1	2005-05-26	Thomason	
	7	20050040788	A1	2005-02-24	Tseng	
	8	20050252573	A1	2005-11-17	Montani	
	9	20070285049	A1	2007-12-13	Krieger et al.	
	10	20120091944	A1	2012-04-19	Rogers	
	11	20130314041	A1	2013-11-28	Proebstle	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	
	Examiner Name	
	Attorney Docket Number	054985.000055-US04

	12	20110068734	A1	2011-03-24	WALDRON; JOHN F.		
	13	20040066168	A1	2004-04-08	GEORGE et al.		
	14	20150306964	A1	2015-10-29	WANG		
	15	20160001666	A1	2016-01-07	NOOK et al.		

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2 472 698	EP	A2	2012-07-04	INFINEON TECHNOLOGIES AG		
	2	20 2013 102 599	DE	U1	2013-08-13	ASIA BRIGHT INDUSTRIAL HONG KONG CO		X
	3	295 07 501	DE	U1	1995-06-29	SEO SOLAR SONNENENERGIE OPPACH		☐
	4	20 2009 016 260	DE	U1	2010-03-25	TSAI MING WEI		☐
	5	2004/036714	WO	A1	2004-04-29	VECTOR PRODUCTS, INC.		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	
	Examiner Name	
	Attorney Docket Number	054985.000055-US04

	6	2013-137873	WO	A1	2013-09-19	Dao		☐
	7	2010-129723	WO	A2	2010-11-11	ENER-GY SAFE TECHNOLOGIES, INC.		☐

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	
	Examiner Name	
	Attorney Docket Number	054985.000055-US04

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/William L. Klima/	Date (YYYY-MM-DD)	2019-06-24
Name/Print	William L. Klima	Registration Number	32422

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis NOOK
Filer:	William Leonard Klima/Renee Tisdale
Attorney Docket Number:	054985.000055-US-04

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**785**

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	36393189
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis NOOK
Customer Number:	20230
Filer:	William Leonard Klima/Renee Tisdale
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985.000055-US-04
Receipt Date:	24-JUN-2019
Filing Date:	
Time Stamp:	17:01:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$785
RAM confirmation Number	062519INTEFSW00004940220585
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	ADS20190624.pdf	7072299 46684ec5eee611fab17a01746252e000a70e51a9	no	10
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
2	Specification	SPECIFICATION20190624.pdf	8626826 b8afefa50718983a743c05de5bf8dc7ecc5784ab	no	14
Warnings:					
Information:					
3		CLAIMSABSTRACT20190624.pdf	69224 45ee02783cc63171c87415151ce3e193fbbde663	yes	5

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Claims	1	4
Abstract	5	5

Warnings:					
Information:					
4	Drawings-only black and white line drawings	DRAWINGS20190624.pdf	240051 0ce8380ff6ca6ae9a15ea7be3199266432ef08a1	no	13
Warnings:					
Information:					
5	Oath or Declaration filed	DECLARATIONS20190624.pdf	784799 9909c42b5766d115793ecaa7d480dd3c123c3dbc	no	8
Warnings:					

Information:					
6	Information Disclosure Statement (IDS) Form (SB08)	updatedids.pdf	1099672 ab8e2d075a6b8344069a4271a05c4727ad2d67fb	no	10
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	35268 39b9299ee9af14da65974c4f7d26b99189633b6c	no	2
Warnings:					
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jonathan	Lewis	NOOK	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Gates Mills	State/Province	OH	Country of Residence	US

Mailing Address of Inventor:

Address 1	The Noco Company, 30339 Diamond Parkway, #102		
Address 2			
City	Glenwillow	State/Province	OH
Postal Code	44139	Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	William	Knight	NOOK	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Shaker Heights	State/Province	OH	Country of Residence	US

Mailing Address of Inventor:

Address 1	The Noco Company, 30339 Diamond Parkway, #102		
Address 2			
City	Glenwillow	State/Province	OH
Postal Code	44139	Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	James	Richard	STANFIELD	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

City	Peoria	State/Province	AZ	Country of Residence	US

Mailing Address of Inventor:

Address 1	The Noco Company, 30339 Diamond Parkway, #102		
Address 2			
City	Glenwillow	State/Province	OH
Postal Code	44139	Country	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Derek	Michael	UNDERHILL	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	Tempe	State/Province	AZ	Country of Residence	US

Mailing Address of Inventor:

Address 1	The Noco Company, 30339 Diamond Parkway, #102		
Address 2			
City	Glenwillow	State/Province	OH
Postal Code	44139	Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence information of this application.**

Customer Number	20230		
Email Address	Patlaw@vorys.com	Add Email	Remove Email

Application Information:

Title of the Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF		
Attorney Docket Number	054985.000055-US04	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	13	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	20230		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	15921792	2018-08-31

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15921792	Continuation of	15691884	2017-08-31

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15691884	Continuation of	14619655	2015-02-11	9770992	2017-09-26

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14619655	Division of	14325938	2014-07-08	9007015	2015-04-14

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
14325938	Continuation of	PCTUS1445434	2014-07-03

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Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

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Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

(•) Assignee	( ) Legal Representative under 35 U.S.C. 117	( ) Joint Inventor
( ) Person to whom the inventor is obligated to assign.	( ) Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. [x]

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Phone Number		Fax Number	
Email Address			

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Assignee Information including Non-Applicant Assignee Information:

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. [x]

Organization Name	THE NOCO COMPANY

Mailing Address Information For Assignee including Non-Applicant Assignee:

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Phone Number		Fax Number	
Email Address			

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Signature	/William L. Klima/			Date (YYYY-MM-DD)	2019-06-24
First Name	William L.	Last Name	Klima	Registration Number	32422

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	054985.000055-US04
	Application Number	
Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

BACKGROUND OF THE INVENTION

The present invention relates generally to apparatus for jump-starting a vehicle having a depleted or discharged battery. Prior art devices are known, which provide either a pair of electrical connector cables that connect a fully-charged battery of another vehicle to the engine start circuit of the dead battery vehicle, or portable booster devices which include a fully-charged battery which can be connected in circuit with the vehicle's engine starter through a pair of cables.

Problems with the prior art arose when either the jumper terminals or clamps of the cables were inadvertently brought into contact with each other while the other ends were connected to a charged battery, or when the positive and negative terminals were connected to the opposite polarity terminals in the vehicle to be jumped, thereby causing a short circuit resulting in sparking and potential damage to batteries and/or bodily injury.

Various attempts to eliminate these problems have been made in the prior art. U.S. Patent No. 6,212,054 issued April 3, 2001, discloses a battery booster pack that is polarity sensitive and can detect proper and improper connections before providing a path for electric current flow. The device uses a set of LEDs connected to optical couplers oriented by a control circuit. The control circuit controls a solenoid assembly controlling the path of power current. The control circuit causes power current to flow through the solenoid assembly only if the points of contact of booster cable clamp connections have been properly made.

U.S. Patent No. 6,632,103 issued October 14, 2003, discloses an adaptive booster cable connected with two pairs of clips, wherein the two pairs of clips are respectively attached to two

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batteries to transmit power from one battery to the other battery. The adaptive booster cable includes a polarity detecting unit connected to each clip, a switching unit and a current detecting unit both provided between the two pairs of clips. After the polarity of each clip is sensed by the polarity detecting unit, the switching unit generates a proper connection between the two batteries. Therefore, the positive and negative terminals of the two batteries are correctly connected based on the detected result of the polarity detecting unit.

U.S. Patent No. 8,493,021 issued July 23, 2013, discloses apparatus that monitors the voltage of the battery of a 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. 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. Once the vehicle is started, the unit automatically electrically disconnects from the vehicle's battery.

U.S. Patent No. 5,189,359 issued February 23, 1993, discloses a jumper cable device having two bridge rectifiers for developing a reference voltage, a four-input decoder for determining which terminals are to be connected based on a comparison of the voltage at each of the four terminals to the reference voltage, and a pair of relays for effecting the correct connection depending on the determination of the decoder. No connection will be made unless only one terminal of each battery has a higher voltage than the reference voltage, indicating "positive" terminals, and one has a lower voltage than the reference voltage, indicating

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"negative" terminals, and that, therefore, the two high voltage terminals may be connected and the two lower voltage terminals may be connected. Current flows once the appropriate relay device is closed. The relay device is preferably a MOSFET combined with a series array of photodiodes that develop MOSFET gate-closing potential when the decoder output causes an LED to light.

U.S. Patent No. 5,795,182 issued August 18, 1998, discloses a polarity independent set of battery jumper cables for jumping a first battery to a second battery. The apparatus includes a relative polarity detector for detecting whether two batteries are configured cross or parallel. A three-position high current capacity crossbar pivot switch is responsive to the relative polarity detector for automatically connecting the plus terminals of the two batteries together and the minus terminals of the two batteries together regardless of whether the configuration detected is cross or parallel, and an undercurrent detector and a delay circuit for returning the device to its ready and unconnected state after the device has been disconnected from one of the batteries. The crossbar pivot switch includes two pairs of contacts, and a pivot arm that pivots about two separate points to ensure full electrical contact between the pairs of contacts. The invention can also be used to produce a battery charger that may be connected to a battery without regard to the polarity of the battery.

U.S. Patent No. 6,262,492 issued July 17, 2001, discloses a car battery jumper cable for accurately coupling an effective power source to a failed or not charged battery, which includes a relay switching circuit connected to the power source and the battery by two current conductor pairs. First and second voltage polarity recognition circuits are respectively connected to the power source and the battery by a respective voltage conductor pair to recognize the polarity of the power source and the battery. A logic recognition circuit produces a control signal subject to

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the polarity of the power source and the battery, and a driving circuit controlled by the control signal from the logic recognition circuit drives the relay switching circuit, enabling the two poles of the power source to be accurately coupled to the two poles of the battery.

U.S. Patent No. 5,635,817 issued June 3, 1997, discloses a vehicle battery charging device that includes a control housing having cables including a current limiting device to prevent exceeding of a predetermined maximum charging current of about 40 to 60 amps. The control housing includes a polarity detecting device to verify the correct polarity of the connection of the terminals of the two batteries and to electrically disconnect the two batteries if there is an incorrect polarity.

U.S. Patent No. 8,199,024 issued June 12, 2012, discloses a safety circuit in a low-voltage connecting system that leaves the two low-voltage systems disconnected until it determines that it is safe to make a connection. When the safety circuit determines that no unsafe conditions exist and that it is safe to connect the two low-voltage systems, the safety circuit may connect the two systems by way of a "soft start" that provides a connection between the two systems over a period of time that reduces or prevents inductive voltage spikes on one or more of the low-voltage systems. When one of the low-voltage systems has a completely-discharged battery incorporated into it, a method is used for detection of proper polarity of the connections between the low-voltage systems. The polarity of the discharged battery is determined by passing one or more test currents through it and determining whether a corresponding voltage rise is observed.

U.S. Patent No. 5,793,185 issued August 11, 1998, discloses a hand-held jump starter having control components and circuits to prevent overcharging and incorrect connection to batteries.

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While the prior art attempted solutions to the abovementioned problems as discussed above, each of the prior art solutions suffers from other shortcomings, either in complexity, cost or potential for malfunction. Accordingly, there exists a need in the art for further improvements to vehicle jump start devices.

SUMMARY OF THE INVENTION

In accordance with an aspect of the invention, apparatus is provided for jump starting a vehicle engine, including: an internal power supply; an output port having positive and negative polarity outputs; a vehicle battery isolation sensor connected in circuit with said positive and negative polarity outputs, configured to detect presence of a vehicle battery connected between said positive and negative polarity outputs; a reverse polarity sensor connected in circuit with said positive and negative polarity outputs, configured to detect polarity of a vehicle battery connected between said positive and negative polarity outputs; a power FET switch connected between said internal power supply and said output port; and a microcontroller configured to receive input signals from said vehicle isolation sensor and said reverse polarity sensor, and to provide an output signal to said power FET switch, such that said power FET switch is turned on to connect said internal power supply to said output port in response to signals from said sensors indicating the presence of a vehicle battery at said output port and proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs.

In accordance with another aspect of the invention, the internal power supply is a rechargeable lithium ion battery pack.

In accordance with yet another aspect of the invention, a jumper cable device is provided, having a plug configured to plug into an output port of a handheld battery charger booster device

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having an internal power supply; a pair of cables integrated with the plug at one respective end thereof; said pair of cables being configured to be separately connected to terminals of a battery at another respective end thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a functional block diagram of a handheld vehicle battery boost apparatus in accordance with one aspect of the present invention;

Figs. 2A - 2C are schematic circuit diagrams of an example embodiment of a handheld vehicle battery boost apparatus in accordance with an aspect of the invention;

Fig. 3 is a perspective view of a handheld jump starter booster device in accordance with one example embodiment of the invention; and

Fig. 4 is a plan view of a jumper cable usable with the handheld jump starter booster device in accordance with another aspect of the invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 is a functional block diagram of a handheld battery booster according to one aspect of the invention. At the heart of the handheld battery booster is a lithium polymer battery pack 32, which stores sufficient energy to jump start a vehicle engine served by a conventional 12 volt lead-acid or valve regulated lead-acid battery. In one example embodiment, a high-surge lithium polymer battery pack includes three 3.7V, 2666 mAh lithium polymer batteries in a 3S1P configuration. The resulting battery pack provides 11.1V, 2666Ah (8000Ah at 3.7V, 29.6Wh). Continuous discharge current is 25C (or 200 amps), and burst discharge current is 50C (or 400 amps). The maximum charging current of the battery pack is 8000mA (8 amps).

A programmable microcontroller unit (MCU) 1 receives various inputs and produces informational as well as control outputs. The programmable MCU 1 further provides flexibility

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to the system by allowing updates in functionality and system parameters, without requiring any change in hardware. According to one example embodiment, an 8 bit microcontroller with 2K x 15 bits of flash memory is used to control the system. One such microcontroller is the HT67F30, which is commercially available from Holtek Semiconductor Inc.

A car battery reverse sensor 10 monitors the polarity of the vehicle battery 72 when the handheld battery booster device is connected to the vehicle's electric system. As explained below, the booster device prevents the lithium battery pack from being connected to the vehicle battery 72 when the terminals of the battery 72 are connected to the wrong terminals of the booster device. A car battery isolation sensor 12 detects whether or not a vehicle battery 72 is connected to the booster device, and prevents the lithium battery pack from being connected to the output terminals of the booster device unless there is a good (e.g. chargeable) battery connected to the output terminals.

A smart switch FET circuit 15 electrically switches the handheld battery booster lithium battery to the vehicle's electric system only when the vehicle battery is determined by the MCU 1 to be present (in response to a detection signal provided by isolation sensor 12) and connected with the correct polarity (in response to a detection signal provided by reverse sensor 10). A lithium battery temperature sensor 20 monitors the temperature of the lithium battery pack 32 to detect overheating due to high ambient temperature conditions and overextended current draw during jump starting. A lithium battery voltage measurement circuit 24 monitors the voltage of the lithium battery pack 32 to prevent the voltage potential from rising too high during a charging operation and from dropping too low during a discharge operation.

Lithium battery back-charge protection diodes 28 prevent any charge current being delivered to the vehicle battery 72 from flowing back to the lithium battery pack 32 from the

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vehicle's electrical system. Flashlight LED circuit 36 is provided to furnish a flashlight function for enhancing light under a vehicle's hood in dark conditions, as well as providing SOS and strobe lighting functions for safety purposes when a vehicle may be disabled in a potentially dangerous location. Voltage regulator 42 provides regulation of internal operating voltage for the microcontroller and sensors. On/Off manual mode and flashlight switches 46 allow the user to control power-on for the handheld battery booster device, to control manual override operation if the vehicle has no battery, and to control the flashlight function. The manual button functions only when the booster device is powered on. This button allows the user to jump-start vehicles that have either a missing battery, or the battery voltage is so low that automatic detection by the MCU is not possible. When the user presses and holds the manual override button for a predetermined period time (such as three seconds) to prevent inadvertent actuation of the manual mode, the internal lithium ion battery power is switched to the vehicle battery connect port. The only exception to the manual override is if the car battery is connected in reverse. If the car battery is connected in reverse, the internal lithium battery power shall never be switched to the vehicle battery connect port.

USB charge circuit 52 converts power from any USB charger power source, to charge voltage and current for charging the lithium battery pack 32. USB output 56 provides a USB portable charger for charging smartphones, tablets, and other rechargeable electronic devices. Operation indicator LEDs 60 provide visual indication of lithium battery capacity status as well as an indication of smart switch activation status (indicating that power is being provided to the vehicle's electrical system).

Detailed operation of the handheld booster device will now be described with reference to the schematic diagrams of Figs. 2A-2C. As shown in Fig. 2A, the microcontroller unit 1 is the

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center of all inputs and outputs. The reverse battery sensor 10 comprises an optically coupled isolator phototransistor (4N27) connected to the terminals of vehicle battery 72 at input pins 1 and 2 with a diode D8 in the lead conductor of pin 1 (associated with the negative terminal CB-), such that if the battery 72 is connected to the terminals of the booster device with the correct polarity, the optocoupler LED 11 will not conduct current, and is therefore turned off, providing a "1" or high output signal to the MCU 1. The car battery isolation sensor 12 comprises an optically coupled isolator phototransistor (4N27) connected to the terminals of vehicle battery 72 at input pins 1 and 2 with a diode D7 in the lead conductor of pin 1 (associated with the positive terminal CB+), such that if the battery 72 is connected to the terminals of the booster device with the correct polarity, the optocoupler LED 11A will conduct current, and is therefore turned on, providing a "0" or low output signal to the MCU, indicating the presence of a battery across the jumper output terminals of the handheld booster device.

If the car battery 72 is connected to the handheld booster device with reverse polarity, the optocoupler LED 11 of the reverse sensor 10 will conduct current, providing a "0" or low signal to microcontroller unit 1. Further, if no battery is connected to the handheld booster device, the optocoupler LED 11A of the isolation sensor 12 will not conduct current, and is therefore turned off, providing a "1" or high output signal to the MCU, indicating the absence of any battery connected to the handheld booster device. Using these specific inputs, the microcontroller software of MCU 1 can determine when it is safe to turn on the smart switch FET 15, thereby connecting the lithium battery pack to the jumper terminals of the booster device. Consequently, if the car battery 72 either is not connected to the booster device at all, or is connected with reverse polarity, the MCU 1 can keep the smart switch FET 15 from being turned on, thus prevent sparking/short circuiting of the lithium battery pack.

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As shown in Fig. 2B, the FET smart switch 15 is driven by an output of the microcontroller 1. The FET smart switch 15 includes three FETs (Q15, Q18, and Q19) in parallel, which spreads the distribution of power from the lithium battery pack over the FETs. When that microcontroller output is driven to a logic low, FETs 16 are all in a high resistance state, therefore not allowing current to flow from the internal lithium battery negative contact 17 to the car battery 72 negative contact. When the micro controller output is driven to a logic high, the FETs 16 (Q15, Q18, and Q19) are in a low resistant state, allowing current to flow freely from the internal lithium battery pack negative contact 17 (LB-) to the car battery 72 negative contact (CB-). In this way, the microcontroller software controls the connection of the internal lithium battery pack 32 to the vehicle battery 72 for jumpstarting the car engine.

Referring back to Fig. 2A, the internal lithium battery pack voltage can be accurately measured using circuit 24 and one of the analog-to-digital inputs of the microcontroller 1. Circuit 24 is designed to sense when the main 3.3V regulator 42 voltage is on, and to turn on transistor 23 when the voltage of regulator 42 is on. When transistor 23 is conducting, it turns on FET 22, thereby providing positive contact (LB+) of the internal lithium battery a conductive path to voltage divider 21 allowing a lower voltage range to be brought to the microcontroller to be read. Using this input, the microcontroller software can determine if the lithium battery voltage is too low during discharge operation or too high during charge operation, and take appropriate action to prevent damage to electronic components.

Still referring to Fig. 2A, the temperature of the internal lithium battery pack 32 can be accurately measured by two negative temperature coefficient (NTC) devices 20. These are devices that reduce their resistance when their temperature rises. The circuit is a voltage divider

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that brings the result to two analog-to-digital (A/D) inputs on the microcontroller 1. The microcontroller software can then determine when the internal lithium battery is too hot to allow jumpstarting, adding safety to the design.

The main voltage regulator circuit 42 is designed to convert internal lithium battery voltage to a regulated 3.3 volts that is utilized by the microcontroller 1 as well as by other components of the booster device for internal operating power. Three lithium battery back charge protection diodes 28 (see Fig. 2B) are in place to allow current to flow only from the internal lithium battery pack 32 to the car battery 72, and not from the car battery to the internal lithium battery. In this way, if the car electrical system is charging from its alternator, it cannot back-charge (and thereby damage) the internal lithium battery, providing another level of safety. The main power on switch 46 (Fig. 2A) is a combination that allows for double pole, double throw operation so that with one push, the product can be turned on if it is in the off state, or turned off if it is in the on state. This circuit also uses a microcontroller output 47 to "keep alive" the power when it is activated by the on switch. When the switch is pressed the microcontroller turns this output to a high logic level to keep power on when the switch is released. In this way, the microcontroller maintains control of when the power is turned off when the on/off switch is activated again or when the lithium battery voltage is getting too low. The microcontroller software also includes a timer that turns the power off after a predefined period of time, (such as, e.g. 8 hours) if not used.

The flashlight LED circuit 45 shown in Fig. 2B controls the operation of flashlight LEDs. Two outputs from the microcontroller 1 are dedicated to two separate LEDs. Thus, the LEDs can be independently software-controlled for strobe and SOS patterns, providing yet another safety feature to the booster device. LED indicators provide the feedback the operator needs to

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understand what is happening with the product. Four separate LEDs 61 (Fig. 2A) are controlled by corresponding individual outputs of microcontroller 1 to provide indication of the remaining capacity of the internal lithium battery. These LEDs are controlled in a "fuel gauge" type format with 25%, 50%, 75% and 100% (red, red, yellow, green) capacity indications. An LED indicator 63 (Fig. 2B) provides a visual warning to the user when the vehicle battery 72 has been connected in reverse polarity. "Boost" and on/off LEDs 62 provide visual indications when the booster device is provide jump-start power, and when the booster device is turned on, respectively.

A USB output 56 circuit (Fig. 2C) is included to provide a USB output for charging portable electronic devices such as smartphones from the internal lithium battery pack 32. Control circuit 57 from the microcontroller 1 allows the USB Out 56 to be turned on and off by software control to prevent the internal lithium battery getting too low in capacity. The USB output is brought to the outside of the device on a standard USB connector 58, which includes the standard voltage divider required for enabling charge to certain smartphones that require it. The USB charge circuit 52 allows the internal lithium battery pack 32 to be charged using a standard USB charger. This charge input uses a standard micro-USB connector 48 allowing standard cables to be used. The 5V potential provided from standard USB chargers is up-converted to the 12.4VDC voltage required for charging the internal lithium battery pack using a DC-DC converter 49. The DC-DC converter 49 can be turned on and off via circuit 53 by an output from the microcontroller 1.

In this way, the microcontroller software can turn the charge off if the battery voltage is measured to be too high by the A/D input 22. Additional safety is provided for helping to eliminate overcharge to the internal lithium battery using a lithium battery charge controller 50

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that provides charge balance to the internal lithium battery cells 51. This controller also provides safety redundancy for eliminating over discharge of the internal lithium battery.

Fig. 3 is a perspective view of a handheld device 300 in accordance with an exemplary embodiment of the invention. 301 is a power on switch. 302 shows the LED "fuel gauge" indicators 61. 303 shows a 12 volt output port connectable to a cable device 400, described further below. 304 shows a flashlight control switch for activating flashlight LEDs 45. 305 is a USB input port for charging the internal lithium battery, and 306 is a USB output port for providing charge from the lithium battery to other portable devices such as smartphones, tablets, music players, etc. 307 is a "boost on" indicator showing that power is being provided to the 12V output port. 308 is a "reverse" indicator showing that the vehicle battery is improperly connected with respect to polarity. 309 is a "power on" indicator showing that the device is powered up for operation.

Fig. 4 shows a jumper cable device 400 specifically designed for use with the handheld device 300. Device 400 has a plug 401 configured to plug into 12 volt output port 303 of the handheld device 300. A pair of cables 402a and 402b are integrated with the plug 401, and are respectively connected to battery terminal clamps 403a and 403b via ring terminals 404a and 404b. The output port 303 and plug 401 may be dimensioned so that the plug 401 will only fit into the output port 303 in a specific orientation, thus ensuring that clamp 403a will correspond to positive polarity, and clamp 403b will correspond to negative polarity, as indicated thereon. Additionally, the ring terminals 404a and 404b may be disconnected from the clamps and connected directly to the terminals of a vehicle battery. This feature may be useful, for example, to permanently attach the cables 302a-302b to the battery of a vehicle. In the event that the battery voltage of the vehicle battery becomes depleted, the handheld booster device 300 can be

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properly connected to the battery very simply by plugging the plug 401 into the output port 303 of the handheld booster device 300 and connecting the battery clamps 403a and 403b to the battery. The plug 401 provides both positive polarity and negative polarity electrical connections between the output port 303 of the handheld battery charger booster device 300 and the plug 401 of the jumper cable device 400. The plug 401 does not have any exposed prongs, as shown in FIG. 5. Further, the individual cables of the pair of cables at one end are connected together (left side in FIG. 5) and integrated with the plug, and the individual cables at the opposite ends are separated apart (right side in FIG. 5). The plug 401 (FIG. 4) comprises a plug body 401a having a uniform or substantially uniform width W along the length of the plug body 401a, as shown in FIG. 4. The plug body 401a of the plug 401 is provided with a surface protrusion 401b (e.g. X-shaped surface protrusion) extending above the outer surface of the plug body 401a of the plug 401. The plug body 401a is a continuous plug body along the length and width of the plug body, and rectangular-shaped. A downwardly tapering transition 402 is provided between the plug body 401a and the pair of cables 402a and 402b. The downwardly tapering transition 402 is provided with transverse ridges. The plug 401 is a single plug having a single connection end or single prong (left end in FIG. 4) provided with a flat end 401c, as shown, and configured to fit into the output port 303 of the handheld booster device 300.

The invention having been thus described, it will be apparent to those skilled in the art that the same may be varied in many ways without departing from the spirit or scope of the invention. Any and all such variations are intended to be encompassed within the scope of the following claims.

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WHAT IS CLAIMED IS:

1. Apparatus for jump starting a vehicle engine, comprising:

an internal power supply;

an output port having positive and negative polarity outputs;

a vehicle battery isolation sensor connected in circuit with said positive and negative polarity outputs, configured to detect presence of a vehicle battery connected between said positive and negative polarity outputs;

a reverse polarity sensor connected in circuit with said positive and negative polarity outputs, configured to detect polarity of a vehicle battery connected between said positive and negative polarity outputs;

a power FET switch connected between said internal power supply and said output port; and

a microcontroller configured to receive input signals from said vehicle isolation sensor and said reverse polarity sensor, and to provide an output signal to said power FET switch, such that said power FET switch is turned on to connect said internal power supply to said output port in response to signals from said sensors indicating the presence of a vehicle battery at said output port and proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs.

2. The apparatus of claim 1, wherein said internal power supply comprises a lithium ion battery.

3. The apparatus of claim 2, wherein said lithium ion battery comprises a battery pack of multiple lithium ion batteries.

4. The apparatus of claim 1, wherein said power FET switch comprises a plurality of FETs in parallel.

5, The apparatus of claim 1, wherein said vehicle isolation sensor and reverse polarity sensor comprise optically coupled isolator phototransistors.

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6. The apparatus of claim 1, further comprising a plurality of power diodes coupled between said output port and said internal power supply to prevent back-charging of said internal power supply from an electrical system connected to said output port.

7. The apparatus of claim 1, further comprising a temperature sensor configured to detect temperature of said internal power supply and to provide a temperature signal to said microcontroller.

8. The apparatus of claim 1, further comprising a voltage measurement circuit configured to measure output voltage of said internal power supply and to provide a voltage measurement signal to said microcontroller.

9. The apparatus of claim 1, further comprising a voltage regulator configured to convert output voltage of said internal power supply to a voltage level appropriate to provide operating power to internal components of the apparatus.

10. The apparatus of claim 1, further comprising a USB output port configured to provide charging power from said internal power supply to a USB-chargeable device.

11. The apparatus of claim 1, further comprising a USB charging port configured to provide charging power from an external power source to said internal power supply.

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

13. The apparatus of claim 12, wherein said source of light is at least one LED.

14. The apparatus of claim 13, wherein said microcontroller is configured to control said at least one LED to provide a visual alarm indicating an emergency situation.

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15. The apparatus of claim 1, further comprising a plurality of visual indicators configured to display remaining capacity status of said internal power supply.

16. The apparatus of claim 15, wherein said plurality of visual indicators comprises a plurality of LEDs providing output light of different colors.

17. The apparatus of claim 1, further comprising a visual indicator configured to warn a user when a vehicle battery is connected with reverse polarity.

18. The apparatus of claim 1, further comprising separate visual indicators configured to display the power on status of the apparatus, and the jump start boost power status of power supplied to said output port.

19. 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 said output port when said vehicle battery isolation sensor is unable to detect presence of a vehicle battery.

20. The apparatus of claim 19, wherein said microcontroller is configured to detect actuation of said manual override switch for at least a predetermined period of time before activation of said manual override mode.

21. The apparatus of claim 1, further comprising a jumper cable device including a plug configured to plug into said output port, a pair of cables integrated with the plug at one respective end thereof and being configured to be connected to terminals of a battery at another respective end thereof.

22. The apparatus of claim 21, wherein said jumper cable device further comprises a pair of ring terminals configured to respectively connect said pair of cables at said another end thereof with one of a battery terminal, or a battery terminal clamp.

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

24. A jumper cable device, comprising:

a plug configured to plug into an output port of a handheld battery charger booster device having an internal power supply;

a pair of cables integrated with the plug at one respective end thereof;

said pair of cables being configured to be separately connected to terminals of a battery at another respective end thereof.

25. The jumper cable device of claim 24, further comprising a pair of ring terminals configured to respectively connect said pair of cables at said another end thereof with one of a battery terminal, or a battery terminal clamp.

26. The jumper cable device of claim 24, wherein said output port and said plug are dimensioned so that the plug will fit into the output port only in one specific orientation.

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ABSTRACT OF THE DISCLOSURE

A handheld device for jump starting a vehicle engine includes a rechargeable lithium ion battery pack and a microcontroller. The lithium ion battery is coupled to a power output port of the device through a FET smart switch actuated by the microcontroller. A vehicle battery isolation sensor connected in circuit with positive and negative polarity outputs detects the presence of a vehicle battery connected between the positive and negative polarity outputs. A reverse polarity sensor connected in circuit with the positive and negative polarity outputs detects the polarity of a vehicle battery connected between the positive and negative polarity outputs, such that the microcontroller will enable power to be delivered from the lithium ion power pack to the output port only when a good battery is connected to the output port and only when the battery is connected with proper polarity of positive and negative terminals.

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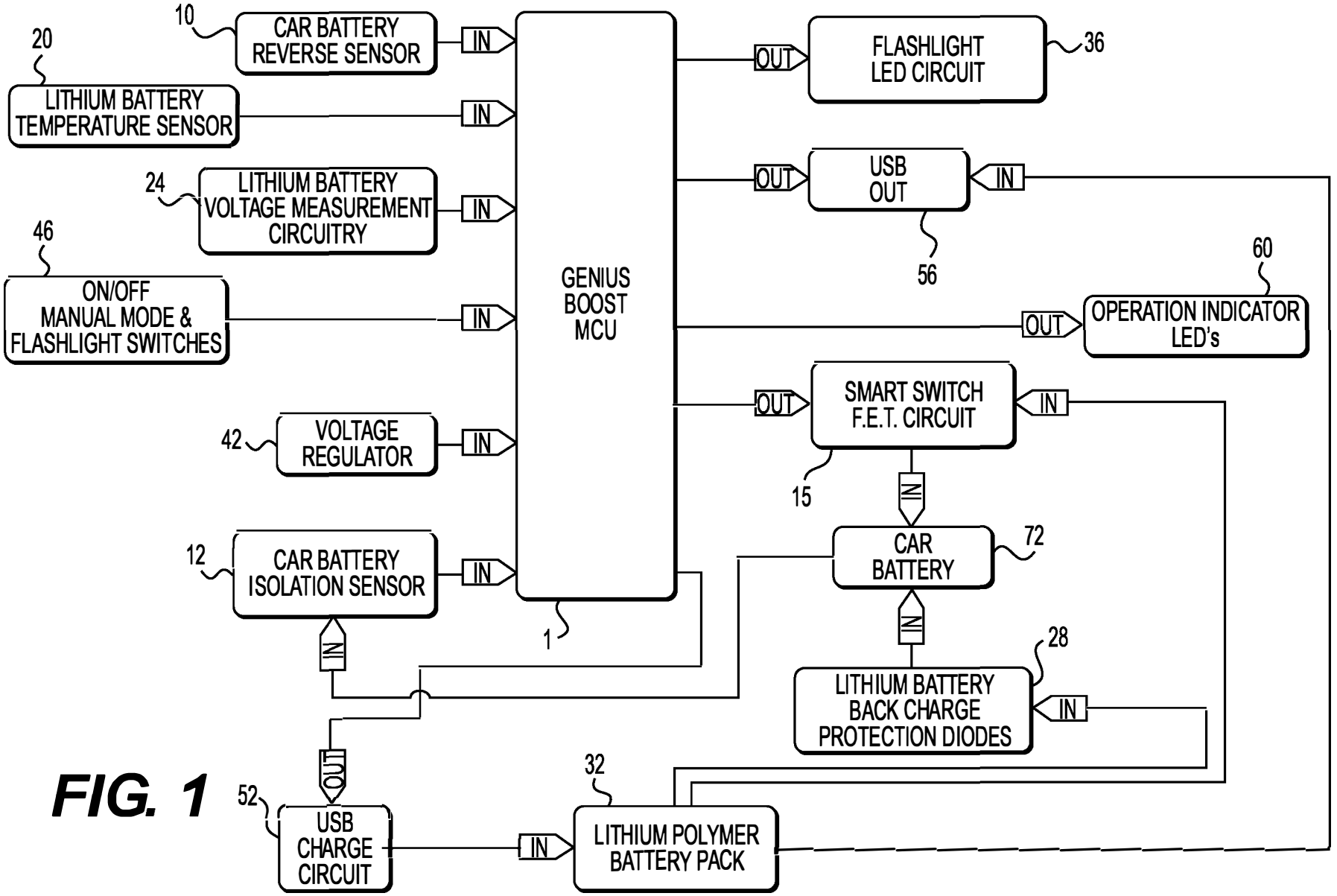


FIG. 1

1 / 13

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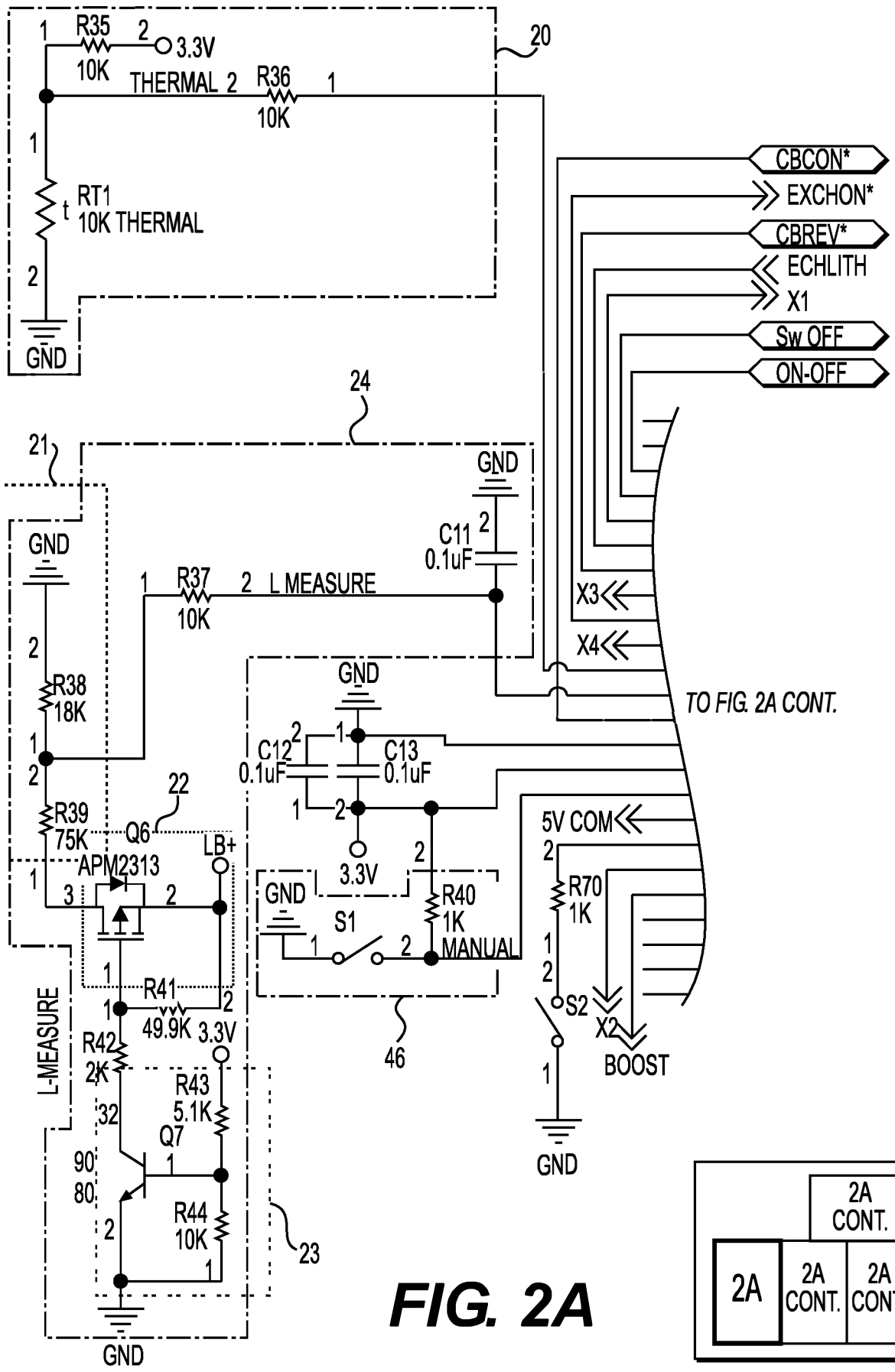


FIG. 2A

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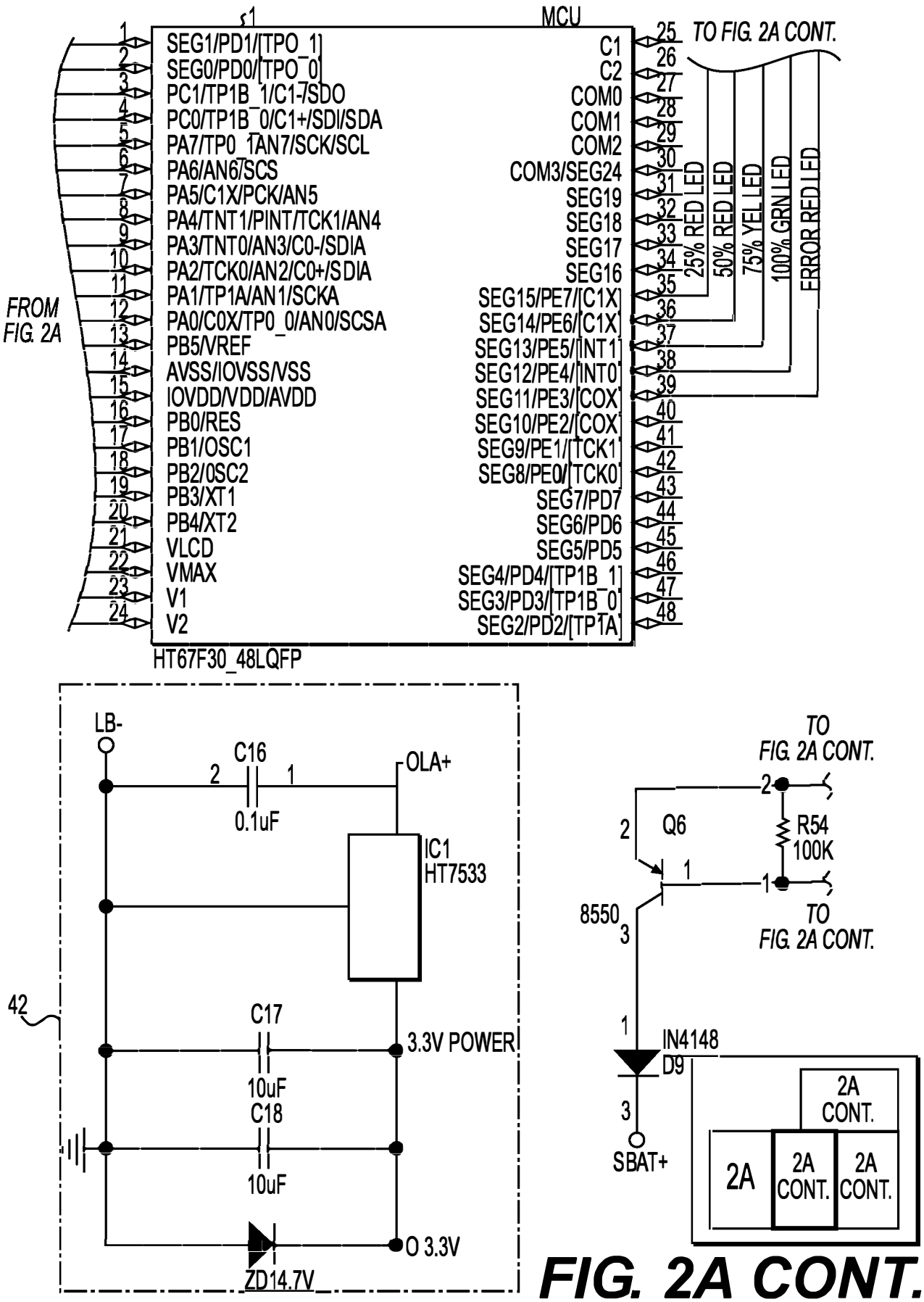

MCU
FROM FIG. 2A
TO FIG. 2A CONT.
SEG1/PD1/[TPO_1]
SEG0/PD0/[TPO_0]
PC1/TP1B_1/C1-/SDO
PC0/TP1B_0/C1+/SDI/SDA
PA7/TP0_1/AN7/SCK/SCL
PA6/AN6/SCS
PA5/C1X/PCK/AN5
PA4/TNT1/PINT/TCK1/AN4
PA3/TNT0/AN3/C0-/SDIA
PA2/TCK0/AN2/C0+/SDIA
PA1/TP1A/AN1/SCKA
PA0/C0X/TP0_0/AN0/SCSA
PB5/VREF
AVSS/IOVSS/VSS
IOVDD/VDD/AVDD
PB0/RES
PB1/OSC1
PB2/0SC2
PB3/XT1
PB4/XT2
VLCD
VMAX
V1
V2
C1
C2
COM0
COM1
COM2
COM3/SEG24
SEG19
SEG18
SEG17
SEG16
SEG15/PE7/[C1X]
SEG14/PE6/[C1X]
SEG13/PE5/[INT1]
SEG12/PE4/[INT0]
SEG11/PE3/[COX]
SEG10/PE2/[COX]
SEG9/PE1/[TCK1]
SEG8/PE0/[TCK0]
SEG7/PD7
SEG6/PD6
SEG5/PD5
SEG4/PD4/[TP1B_1]
SEG3/PD3/[TP1B_0]
SEG2/PD2/[TP1A]
25% RED LED
50% RED LED
75% YEL LED
100% GRN LED
ERROR RED LED
HT67F30_48LQFP
LB-
C16
0.1uF
OLA+
IC1
HT7533
42
C17
10uF
C18
10uF
3.3V POWER
O 3.3V
ZD14.7V
TO FIG. 2A CONT.
Q6
R54
100K
8550
IN4148
D9
SBAT+
2A
2A CONT.

FIG. 2A CONT.

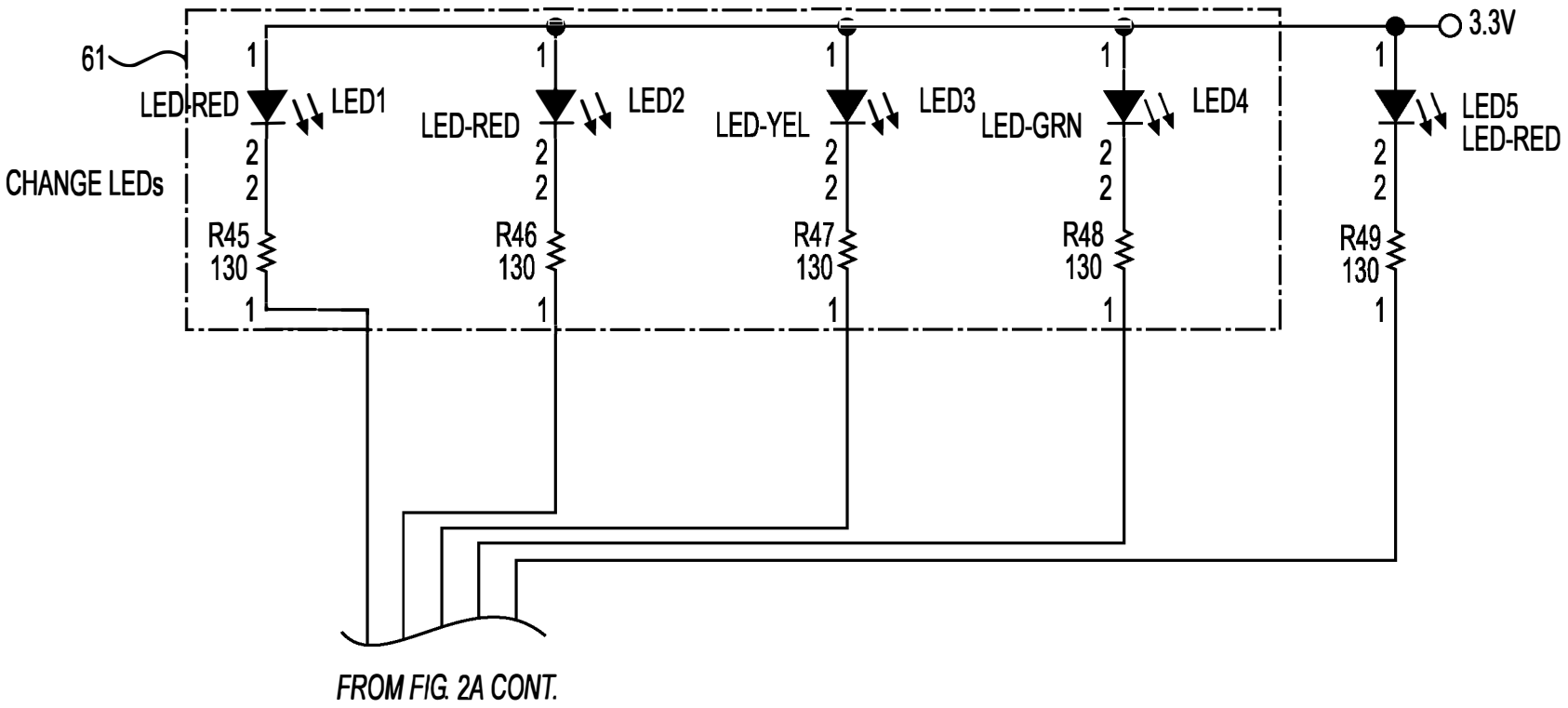


FIG. 2A CONT.

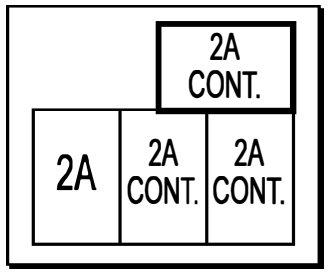


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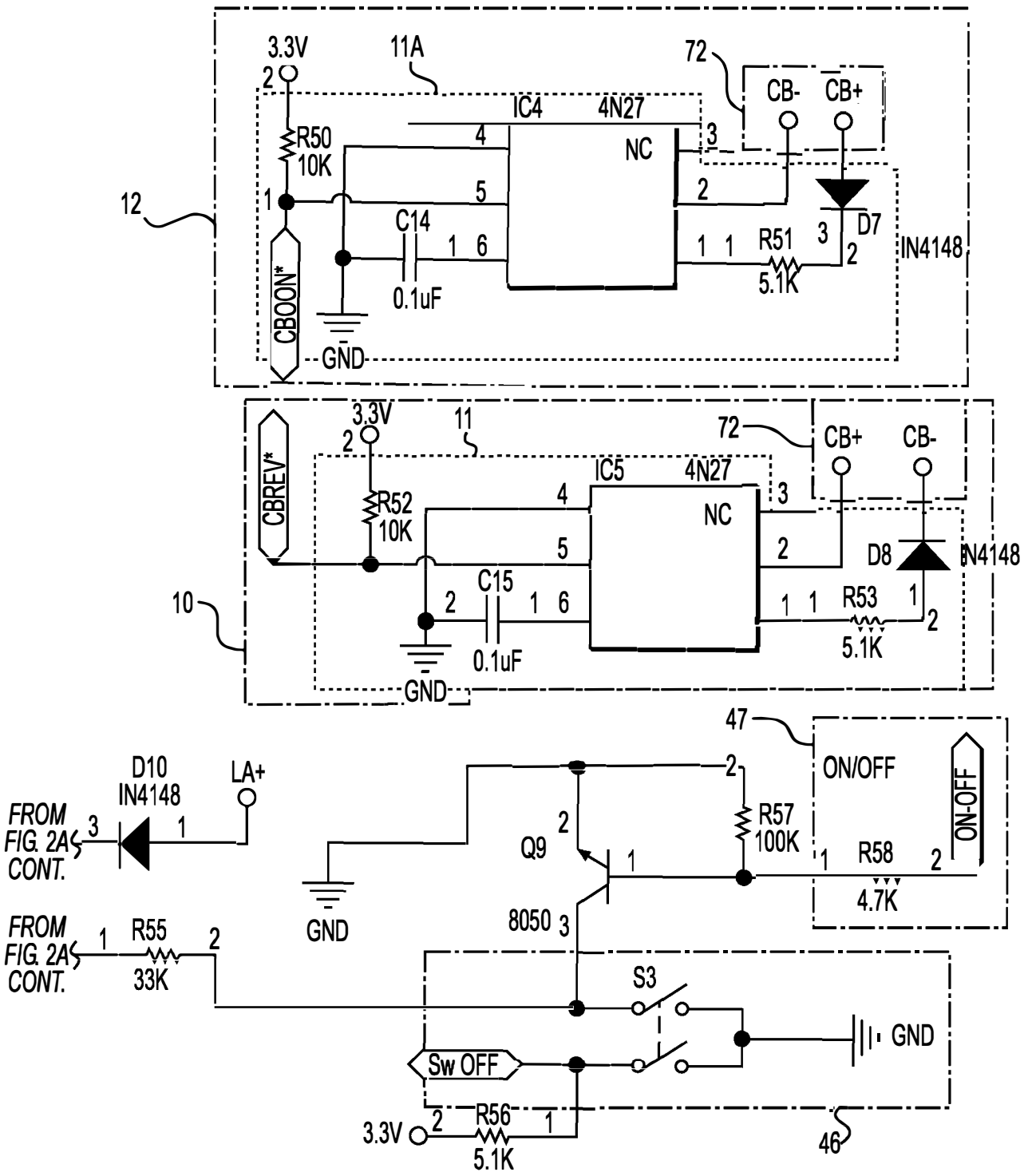


FIG. 2A CONT.

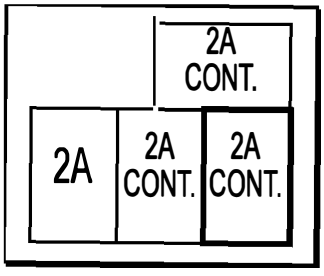


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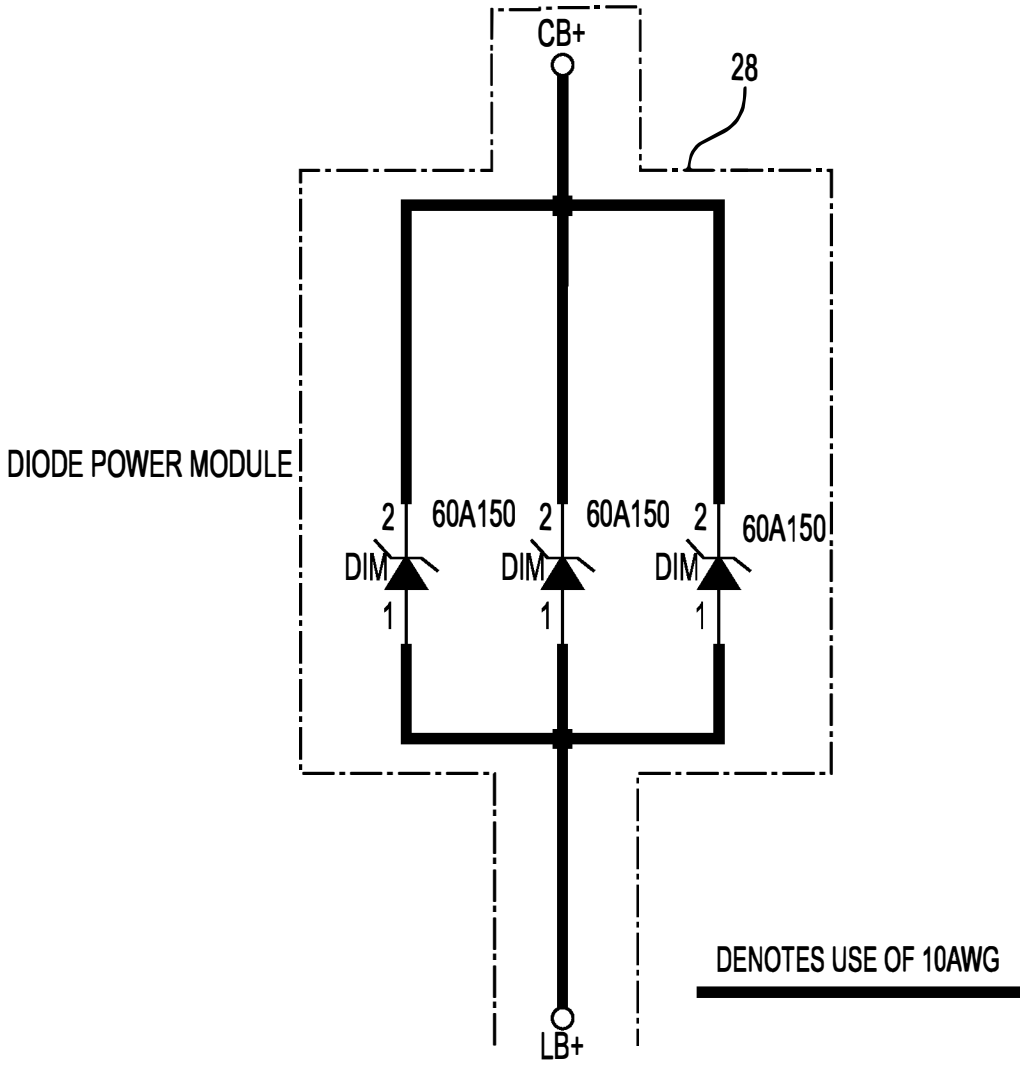


FIG. 2B

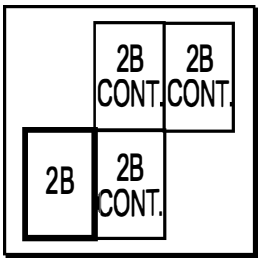


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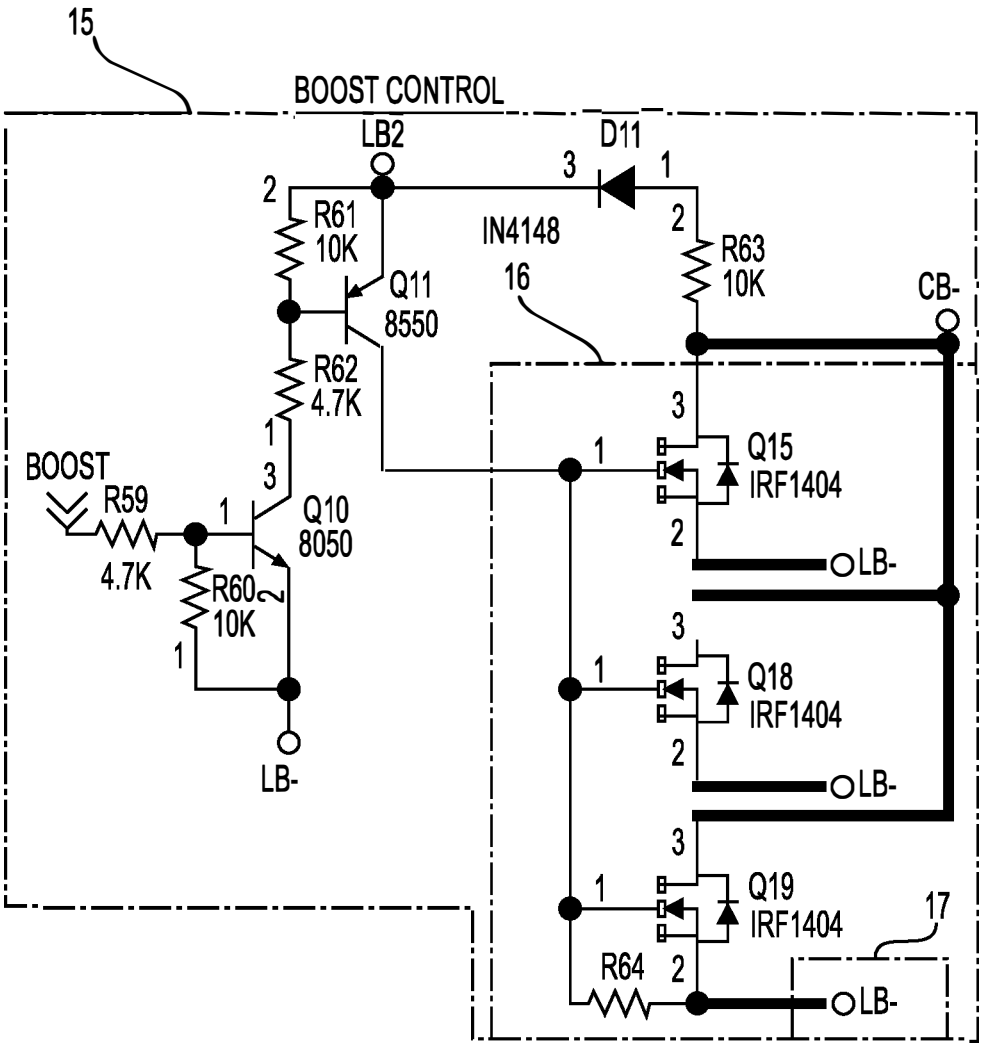


FIG. 2B CONT.

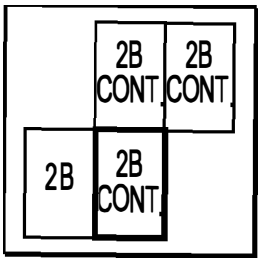


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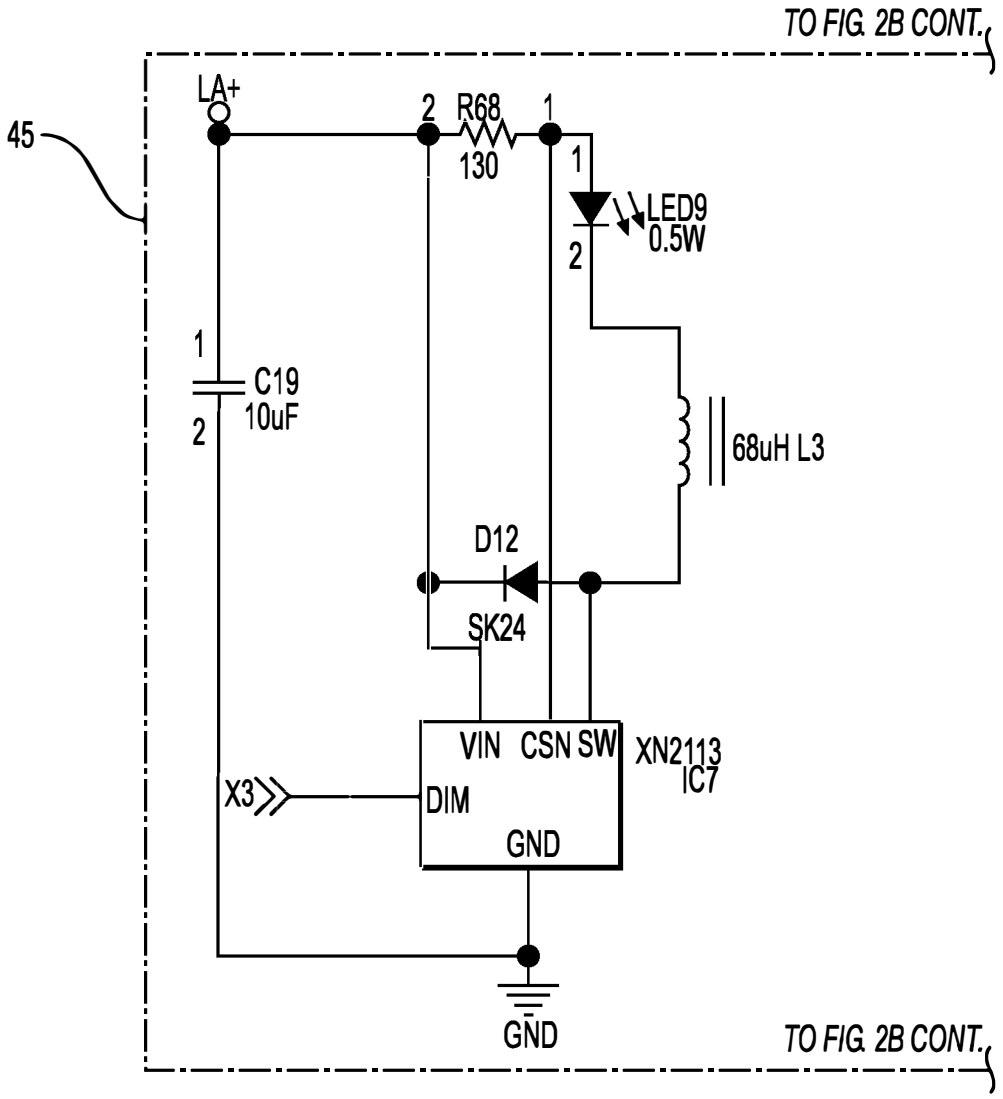


FIG. 2B CONT.

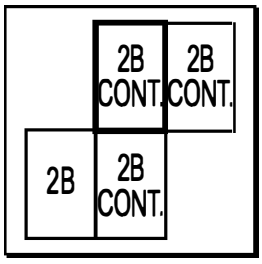


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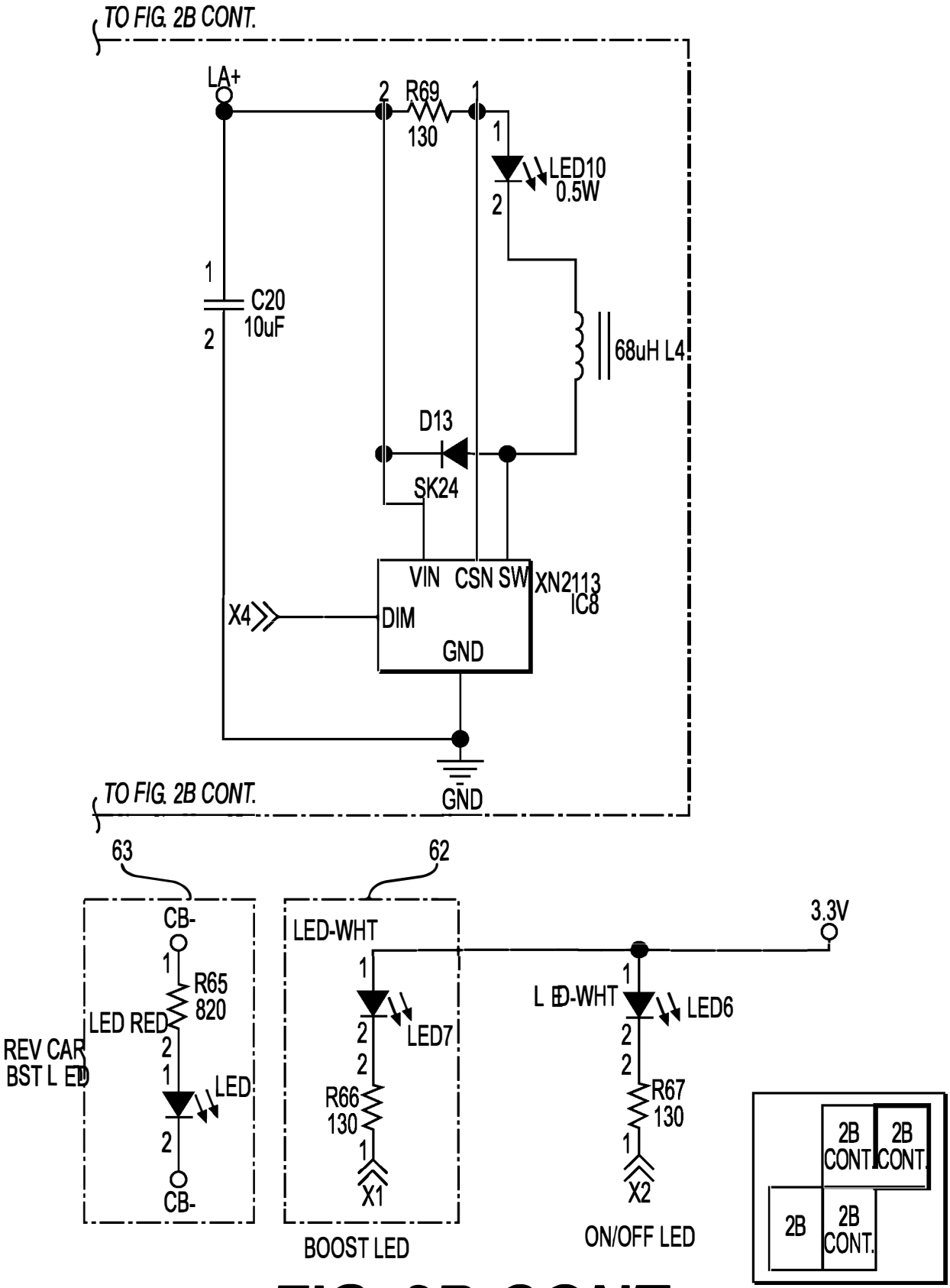

TO FIG. 2B CONT.
LA+
R69
130
LED10
0.5W
C20
10uF
68uH L4
D13
SK24
VIN CSN SW
XN2113
IC8
X4
DIM
GND
TO FIG. 2B CONT.
GND
63
62
CB-
R65
820
LED RED
REV CAR
BST L ED
LED
CB-
LED-WHT
LED7
R66
130
X1
BOOST LED
3.3V
L ED-WHT
LED6
R67
130
X2
ON/OFF LED
2B CONT.
2B CONT.
2B
2B CONT.

FIG. 2B CONT.

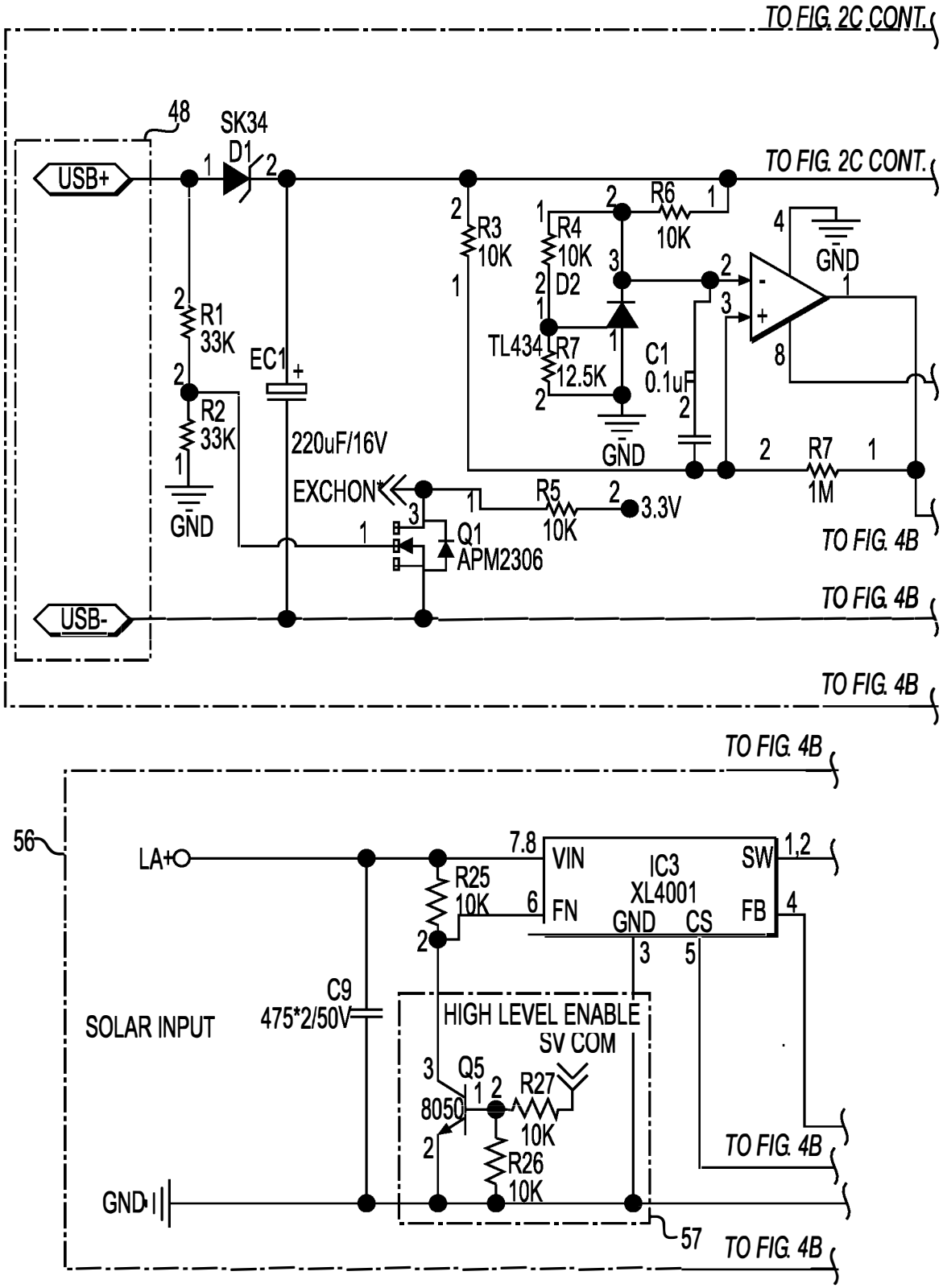


FIG. 2C

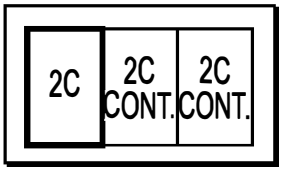


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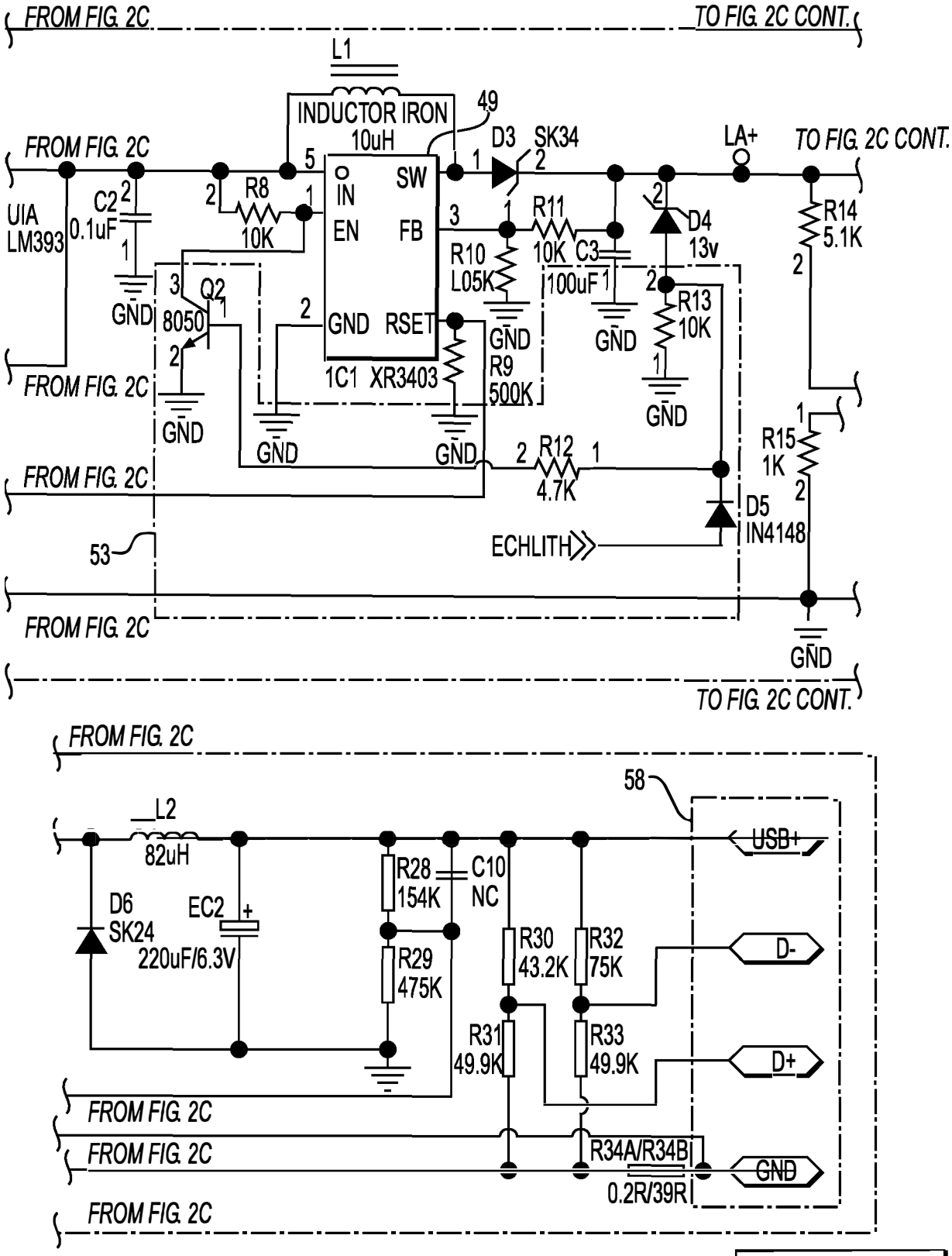


FIG. 2C CONT.

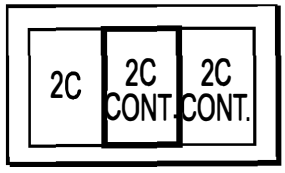


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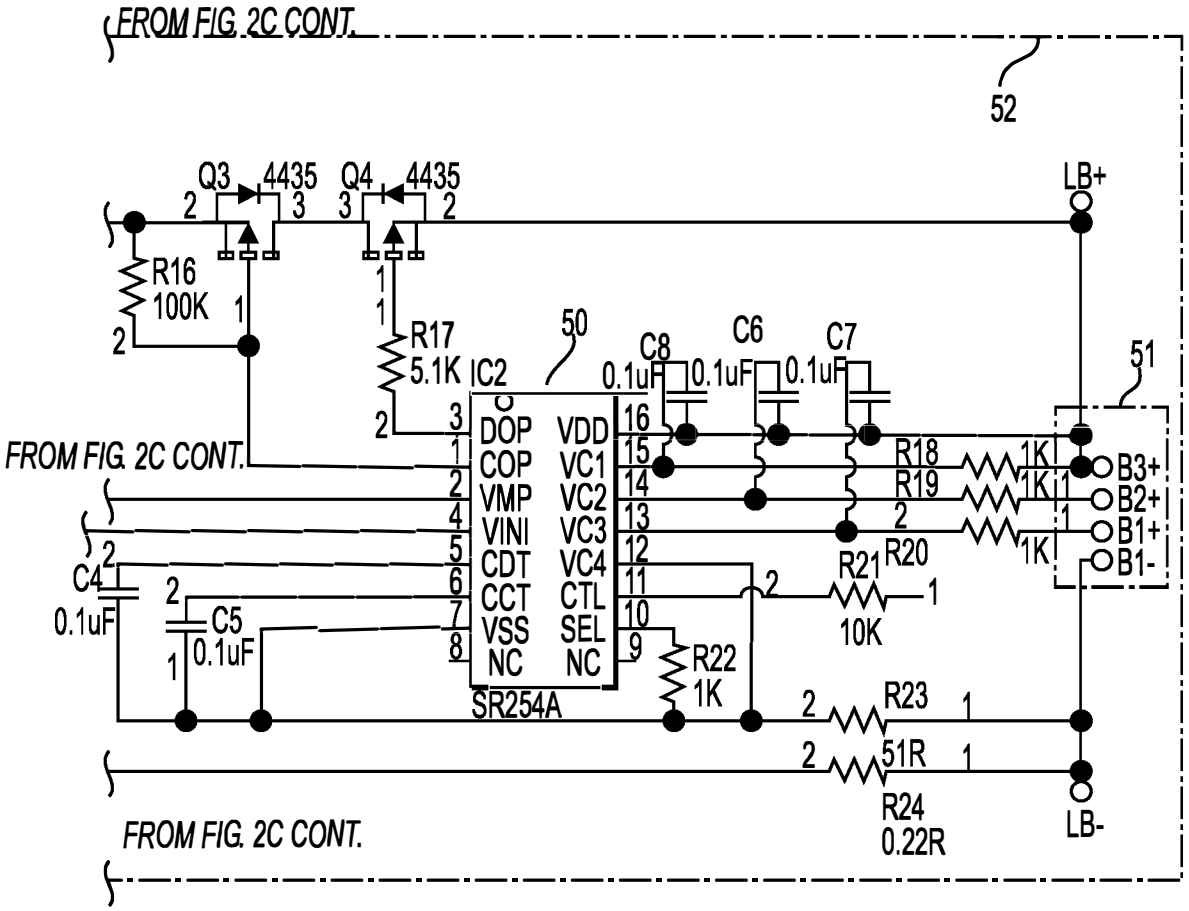


FIG. 2C CONT.

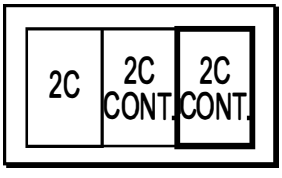


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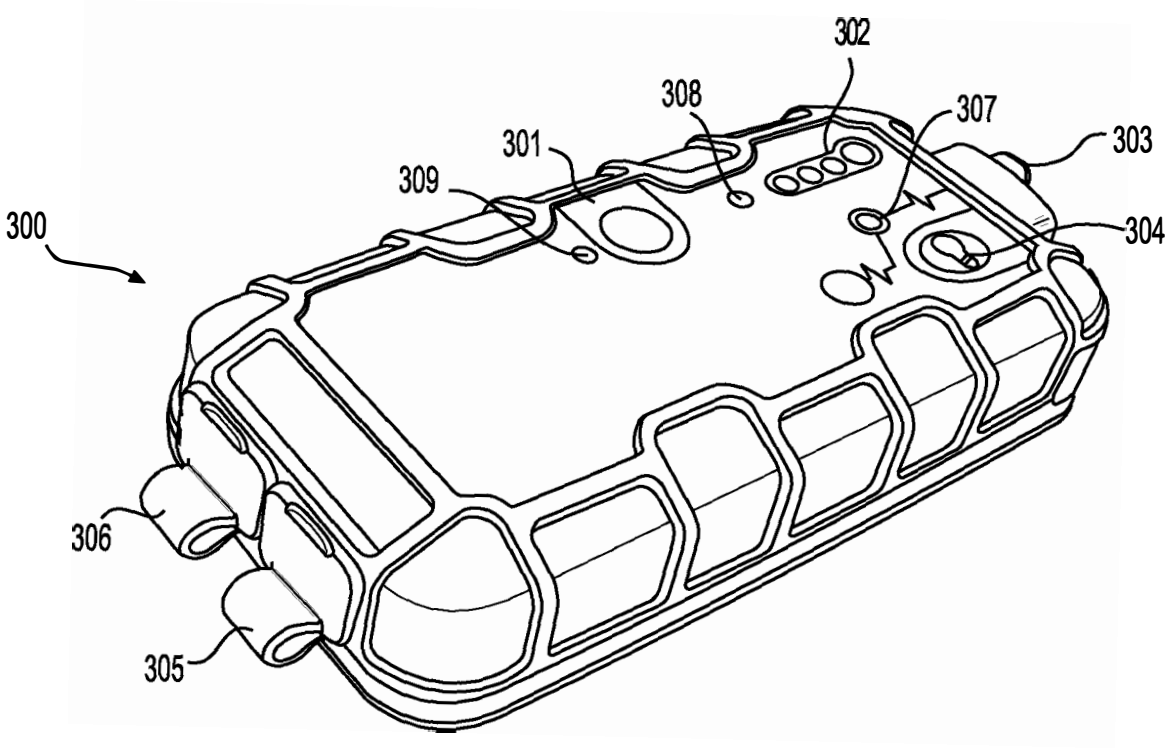


FIG. 3

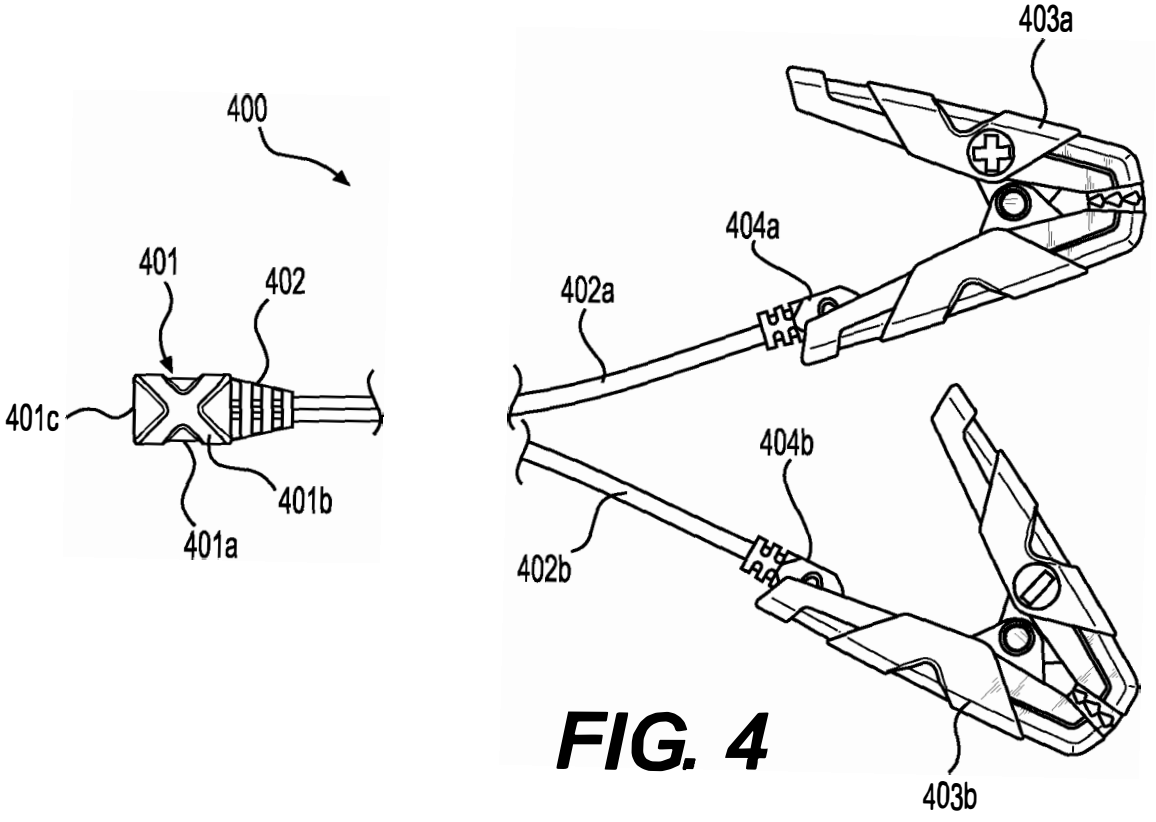


FIG. 4

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PTO/AIA/01 (06-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____

  filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Jonathan Lewis Nook Date (Optional): 7/7/2014

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Privacy Act Statement

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PTO/AIA/01 (06-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: William Knight Nook Date (Optional): 7-7-14

Signature: William Knight Nook

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The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Derek Michael Underhill _____ Date (Optional) :_____

Signature: _____

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LEGAL NAME OF INVENTOR

Inventor: James Richard Stanfield Date (Optional): 7/8/2014

Signature: James Richard Stanfield

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/450,422

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	26 minus 20 =	* 6	x 50 =	300	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*	x 230 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1085		TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT A		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

EXHIBIT 1002
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/450,422	06/24/2019	Jonathan Lewis Nook	054985.000055-US04

CONFIRMATION NO. 1008

20230
Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
WASHINGTON, DC 20006-1152

FORMALITIES LETTER

OC000000109309232

Date Mailed: 07/02/2019

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing.

Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Additional claim fees of $ **300** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **300** for **6** total claims over 20.
- $(**0**) previous unapplied payment amount.
- $ **300** TOTAL FEE BALANCE DUE.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/ldvan/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/450,422	06/24/2019	1726	785	054985.000055-US04	26	2

CONFIRMATION NO. 1008

FILING RECEIPT

20230
Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
WASHINGTON, DC 20006-1152

OC000000109309231

Date Mailed: 07/02/2019

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Jonathan Lewis Nook, Gates Mills, OH;
William Knight Nook, Shaker Heights, OH;
James Richard Stanfield, Peoria, AZ;
Derek Michael Underhill, Tempe, AZ;

Applicant(s)

THE NOCO COMPANY, Glenwillow, OH;

Assignment For Published Patent Application

THE NOCO COMPANY, Glenwillow, OH

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 15/921,792 03/15/2018 PAT 10328808 *
which is a CON of 15/691,884 08/31/2017
which is a CON of 14/619,655 02/11/2015 PAT 9770992
which is a DIV of 14/325,938 07/08/2014 PAT 9007015
which is a CON of PCT/US14/45434 07/03/2014
(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 07/01/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/450,422**

Projected Publication Date: 10/10/2019

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

Preliminary Class

429

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign

patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Patent Application Fee Transmittal

Application Number:	16450422
Filing Date:	24-Jun-2019
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Filer:	William Leonard Klima/Renee Tisdale
Attorney Docket Number:	054985.000055-US04

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	6	50	300
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**300**

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	36517435
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Renee Tisdale
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985.000055-US04
Receipt Date:	08-JUL-2019
Filing Date:	24-JUN-2019
Time Stamp:	15:09:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$300
RAM confirmation Number	070919INTEFSW00001973220585
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	30611 9a64e0ee4106836c59761d4bea1e8cf9b7d65a74	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	30611		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Patent Application Fee Transmittal

Application Number:	16450422
Filing Date:	24-Jun-2019
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Filer:	William Leonard Klima/Renee Tisdale
Attorney Docket Number:	054985.000055-US05

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	6	50	300
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**300**

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	36742035
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Renee Tisdale
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985.000055-US05
Receipt Date:	31-JUL-2019
Filing Date:	24-JUN-2019
Time Stamp:	14:04:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$300
RAM confirmation Number	E20197UE04439668
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	30609 594cfefe9aaeab5a23d1b1f5a4df161bb4090eb7	no	2

Warnings:

Information:

Total Files Size (in bytes):	30609

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

MAIL STOP MISSING PARTS
Attorney Docket No.: 054985.000055-05

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Jonathan Lewis Nook et al.

Appl. No.:	16/450,422	Examiner:	TBD
Filing Date:	24 June 2019 (24.06.2019)	Art Unit:	2859
		Conf. No.:	1008

Title: **PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF**

REQUEST FOR A REFUND

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

This request for refund is made in the amount of **$300.00** for the small entity fee for the 6 total claims over 20, in response to the Notice to File Missing Parts dated July 2, 2019.

Applicant submits that the additional claim fees of $300.00 was previously paid on July 9, 2019.

Please refund the amount of $300.00 to Deposit Account Number 22-0585. Please direct all inquiries regarding this matter to the undersigned.

Respectfully submitted,

VORYS, SATER, SEYMOUR AND PEASE LLP

/William L. Klima/

William L. Klima
Registration No. 32422
Customer No. 20230

Date: July 31, 2019

VORYS, SATER, SEYMOUR AND PEASE LLP
1909 K Street NW, Ninth Floor
Washington, D.C. 20006-1152
Tel: 202-467-8800 / Fax: 202-533-9187
E-mail: Patlaw@vorys.com

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	36745379
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Renee Tisdale
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985.000055-US05
Receipt Date:	31-JUL-2019
Filing Date:	24-JUN-2019
Time Stamp:	16:02:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Refund Request	REQUESTFORREFUND.pdf	260632 3a2e2ffb5d9e03d89cd90f7accce1ace2e87d3ff	no	1

Warnings:

Information:	
Total Files Size (in bytes):	260632

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/450,422	06/24/2019	Jonathan Lewis Nook	054985.000055-US05

CONFIRMATION NO. 1008

20230
Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
WASHINGTON, DC 20006-1152

PUBLICATION NOTICE

OC000000111802557

Title:PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

Publication No.US-2019-0308518-A1
Publication Date:10/10/2019

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	37491469
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima
Filer Authorized By:	
Attorney Docket Number:	054985.000055-US05
Receipt Date:	17-OCT-2019
Filing Date:	24-JUN-2019
Time Stamp:	18:39:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	2019_10_17_pa.pdf	141452 ecb4b3e75c76a4ef2477d7328695a1d9b38730a8	no	11

Warnings:

Information:	
Total Files Size (in bytes):	141452

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Jonathan Lewis NOOK	Docket No.:	054985.000055-US05
Application No.:	16/450,422	Examiner:	DIAO, M. BAYE
Filed:	June 24, 2019	Art Unit:	2859
Customer No.:	20230	Conf. No.:	1008

For: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

PRELIMINARY AMENDMENT

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Applicant requests entry of this Preliminary Amendment, in connection with the above-identified application, prior to Examination on the merits.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) ~~Apparatus~~ A jump starting apparatus configured for jump starting a discharged or depleted vehicle ~~engine~~ battery, the apparatus comprising:

an internal power supply;

an output [[port]] device configured for connection to the vehicle battery, the output device having a positive polarity output device and a negative polarity ~~outputs~~ output device;

a vehicle battery isolation sensor connected in a first circuit with [[said]] the positive polarity output device and the negative polarity ~~outputs~~ output device, the vehicle battery isolation sensor configured to detect a presence of [[a]] the vehicle battery connected between [[[said]] the positive polarity output device and the negative polarity ~~outputs~~ output device;

a reverse polarity sensor connected in a second circuit with [[said]] the positive polarity output device and the negative polarity ~~outputs~~ output device, the reverse polarity sensor configured to detect a polarity of [[a]] the vehicle battery connected between [[said]] the positive polarity output and the negative polarity ~~outputs~~ output;

a power [[FET]] switch connected between [[said]] the internal power supply and [[said]] the output [[port] device; and

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a microcontroller configured to receive one or more input signals ~~from said~~ generated by the vehicle isolation sensor and [[said]] the reverse polarity sensor, and to provide an output signal to [[said]] the power [[FET]] switch, such that [[said]] the power [[FET]] switch is turned on to connect [[said]] the internal power supply to [[said]] the output [[port]] device in response to the one or more input signals from both the [[said]] sensors indicating the presence of a vehicle battery ~~at said~~ connected to the output [[port]] device and a proper polarity connection of positive and negative terminals of [[said]] the vehicle battery with [[said]] the positive and negative polarity ~~outputs~~ output devices.

2. (Currently Amended) The apparatus of claim 1, wherein [[said]] the internal power supply comprises a lithium ion battery.

3. (Currently Amended) The apparatus of claim 2, wherein [[said]] the lithium ion battery comprises a battery pack of multiple lithium ion batteries.

4. (Currently Amended) The apparatus of claim 1, wherein [[said]] the power [[FET]] switch comprises ~~a plurality of FETs in parallel~~ one or more FETs.

5. (Currently Amended) The apparatus of claim 1, wherein [[said]] the vehicle isolation sensor and the reverse polarity sensor comprise optically coupled isolator phototransistors.

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6. (Currently Amended) The apparatus of claim 1, further comprising a plurality of power diodes coupled between [[said]] the output [[port]] device and [[said]] the internal power supply to prevent back-charging of [[said]] the internal power supply from an electrical system connected to [[said]] the output [[port]] device.

7. (Currently Amended) The apparatus of claim 1, further comprising a temperature sensor configured to detect temperature of [[said]] the internal power supply and to provide a temperature signal to [[said]] the microcontroller.

8. (Currently Amended) The apparatus of claim 1, further comprising a voltage measurement circuit configured to measure output voltage of [[said]] the internal power supply and to provide a voltage measurement signal to [[said]] the microcontroller.

9. (Currently Amended) The apparatus of claim 1, further comprising a voltage regulator configured to convert output voltage of [[said]] the internal power supply to a voltage level appropriate to provide operating power to internal components of the ~~apparatus~~ jump starting apparatus.

10. (Currently Amended) The apparatus of claim 1, further comprising a USB output port configured to provide charging power from [[said]] the internal power supply to a USB-chargeable device.

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11. (Currently Amended) The apparatus of claim 1, further comprising a USB charging port configured to provide charging power from an external power source to [[said]] the internal power supply.

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

13. (Currently Amended) The apparatus of claim 12, wherein [[said]] the source of light is at least one LED.

14. (Currently Amended) The apparatus of claim 13, wherein [[said]] the microcontroller is configured to control [[said]] the at least one LED to provide a visual alarm indicating an emergency situation.

15. (Currently Amended) The apparatus of claim 1, further comprising a plurality of visual indicators configured to display remaining capacity status of [[said]] the internal power supply.

16. (Currently Amended) The apparatus of claim 15, wherein [[said]] the plurality of visual indicators comprises a plurality of LEDs providing output light of different colors.

17. (Currently Amended) The apparatus of claim 1, further comprising a visual indicator configured to warn a user when a vehicle battery is connected with reverse polarity.

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18. (Currently Amended) The apparatus of claim 1, further comprising separate visual indicators configured to display the power on status of the apparatus, and the jump start boost power status of power supplied to [[said]] the output [[port]] 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 [[said]] the output port when [[said]] the vehicle battery isolation sensor is unable to detect presence of a vehicle battery.

20. (Currently Amended) The apparatus of claim 19, wherein said microcontroller is configured to detect actuation of [[said]] the manual override switch for at least a predetermined period of time before activation of [[said]] the manual override mode.

21. (Currently Amended) The apparatus of claim 1, further comprising a jumper cable device including a plug configured to plug into [[said]] an output port of the jump starting apparatus, and a pair of cables integrated with the plug at one respective end thereof and being configured to be connected to terminals of a battery at another respective end thereof.

22. (Currently Amended) The apparatus of claim 21, wherein [[said]] the jumper cable device further comprises a pair of ring terminals configured to respectively connect [[said]] the pair of cables at [[said]] the another end thereof with one of a battery terminal, or a battery terminal clamp.

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

24. (Original) A jumper cable device, comprising:

a plug configured to plug into an output port of a handheld battery charger booster device having an internal power supply;

a pair of cables integrated with the plug at one respective end thereof;

said pair of cables being configured to be separately connected to terminals of a battery at another respective end thereof.

25. (Currently Amende) The jumper cable device of claim [[24]] 23, further comprising a pair of ring terminals configured to respectively connect [[said]] the pair of cables at [[said]] the another end thereof with one of a battery terminal, or a battery terminal clamp.

26. (Currently Amended) The jumper cable device of claim 24, wherein [[said]] the output [[port]] device and [[said]] the plug are dimensioned so that the plug will fit into the output port only in one specific orientation.

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27. (New) A device for jump starting a discharged or depleted vehicle battery, the device comprising:

an internal power supply;

an output device configured for connection to the vehicle battery, the output device having a positive polarity output device and a negative polarity output device;

a vehicle battery isolation sensor connected in circuit with the positive polarity output device and the negative polarity output device, the vehicle battery isolation sensor configured to detect a presence of the vehicle battery connected between the positive polarity output device and the negative polarity output device;

a reverse polarity sensor connected in circuit with the positive polarity output device and the negative polarity output device, the reverse polarity sensor configured to detect a polarity of the vehicle battery connected between the positive polarity output and the negative polarity output;

a power switch connected between the internal power supply and the output device; and

a microcontroller configured to directly or indirectly receive one or more input signals generated by the vehicle isolation sensor and the reverse polarity sensor, and to provide an output signal to the power switch, such that the power switch is turned on to connect the internal power supply to the output device in response to the one or more input signals from both the sensors indicating the presence of a vehicle battery connected to the output device and a proper polarity connection of positive and negative terminals of the vehicle battery with the positive and negative polarity output devices.

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28. (New) A device for jump starting a discharged or depleted vehicle battery, the device comprising:

an internal power supply;

an output device configured for connection to the vehicle battery, the output device having a positive polarity output device and a negative polarity output device;

a vehicle battery isolation sensor connected in a first circuit with the positive polarity output device and the negative polarity output device, the vehicle battery isolation sensor configured to detect a presence of the vehicle battery connected between the positive polarity output device and the negative polarity output device;

a reverse polarity sensor connected in a second circuit with the positive polarity output device and the negative polarity output device, the reverse polarity sensor configured to detect a polarity of the vehicle battery connected between the positive polarity output and the negative polarity output;

a power switch connected between the internal power supply and the output device; and

a microcontroller configured to simultaneously receive one or more input signals generated by the vehicle isolation sensor and the reverse polarity sensor, and to provide an output signal to the power switch, such that the power switch is turned on to connect the internal power supply to the output device in response to the one or more input signals from both the sensors indicating the presence of a vehicle battery connected to the output device and a proper polarity connection of positive and negative terminals of the vehicle battery with the positive and negative polarity output devices.

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REMARKS

The Examiner is invited to contact the undersigned representative with any questions or suggestions.

Claims 1-26 are pending in the application prior to entry of the above amendments to the claims.

Claims 1-11, 13-23, 25, and 26 are amended above, and claims 27 and 28 are newly added. Support is provided by the originally filed specification, claims, and drawings. No new matter has been added.

CONCLUSION

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The Examiner is invited to contact the undersigned representative with any questions or suggestions.

Applicant petitions for any extensions of time to timely file this Amendment and Response.

The Director is hereby authorized to charge any deficiency in fees filed, asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account 22-0585. Please credit any excess fees to such account.

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Respectfully submitted,

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Attorney for Applicant

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United States Patent and Trademark Office

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Document Code:WFEE

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Sale Accounting Date:10/22/2019

Sale Item Reference Number	Effective Date
16450422	10/17/2019

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20190LD51089308	2201	INDEPENDENT CLAIMS IN EXCESS OF 3	$230.00	Deposit Account
I20190LD51089308	2202	CLAIMS IN EXCESS OF 20	$100.00	Deposit Account

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/450,422

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	28 minus 20 =	* 8	x 50 =	400	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1	x 230 =	230			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1415		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/450,422	06/24/2019	2859	1415	054985.000055-US05	28	4

CONFIRMATION NO. 1008

UPDATED FILING RECEIPT

20230
Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
WASHINGTON, DC 20006-1152

OC000000112077147

Date Mailed: 10/24/2019

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

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Inventor(s)

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Assignment For Published Patent Application

THE NOCO COMPANY, Glenwillow, OH

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 15/921,792 03/15/2018 PAT 10328808 *
which is a CON of 15/691,884 08/31/2017
which is a CON of 14/619,655 02/11/2015 PAT 9770992
which is a DIV of 14/325,938 07/08/2014 PAT 9007015
which is a CON of PCT/US14/45434 07/03/2014
(*)Data provided by applicant is not consistent with PTO records.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

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Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 07/01/2019

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/450,422**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

Preliminary Class

320

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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PLUS Search Results for S/N 16450422, Searched Mon Dec 30 10:43:42 EST 2019

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5508122 99
5534368 99
5539820 99

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Patent Application Fee Transmittal

Application Number:	16450422
Filing Date:	24-Jun-2019
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Filer:	William Leonard Klima
Attorney Docket Number:	054985.000055-US05

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	5	50	250
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**250**

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Electronic Acknowledgement Receipt

EFS ID:	38798033
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima
Filer Authorized By:	
Attorney Docket Number:	054985.000055-US05
Receipt Date:	06-MAR-2020
Filing Date:	24-JUN-2019
Time Stamp:	18:38:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$250
RAM confirmation Number	E202036I39291962
Deposit Account	220585
Authorized User	William Klima

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37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	2020_03_06_preliminary_amendment.pdf	158532 d56b1e1b187d049785c443dd7928adac332120b0	no	18
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30546 a1dd26ec75c19ea8f824023c02f17bde508339b3	no	2
Warnings:					
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		Total Files Size (in bytes):	189078		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Jonathan Lewis NOOK	Docket No.:	054985.000055-US05
Application No.:	16/450,422	Examiner:	DIAO, M. BAYE
Filed:	June 24, 2019	Art Unit:	2859
Customer No.:	20230	Conf. No.:	1008

For: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

SUPPLEMENTAL PRELIMINARY AMENDMENT

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Applicant requests entry of this additional Preliminary Amendment, in connection with the above-identified application, prior to Examination on the merits.

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AMENDMENTS TO THE SPECIFICATION

Please amend the specification as follows.

Page 7, lines 5-12

A car battery reverse sensor 10 monitors the polarity of the vehicle battery 72 when the handheld battery booster device is connected to the vehicle's electric system. As explained below, the booster device prevents the lithium battery pack from being connected to the vehicle battery 72 when the terminals of the battery 72 are connected to the wrong terminals of the booster device. A battery presence sensor (e.g. car battery isolation sensor 12) detects whether or not a vehicle battery 72 is present and connected to the booster device, and prevents the lithium battery pack from being connected to the output terminals of the booster device unless there is a good (e.g. chargeable) battery present and connected to the output terminals.

Page 13, line 13 thru page 14, line 17

FIG. 4 shows a jumper cable device 400 specifically designed for use with the handheld device 300. Device 400 has a plug 401 configured to plug into 12 volt output port 303 of the handheld device 300. A pair of cables 402a and 402b are integrated with the plug 401, and are respectively connected to the positive and negative polarity battery terminal connectors (e.g. battery terminal clamps 403a and 403b) via ring terminals 404a and 404b. The port 303 and plug 401 may be dimensioned so that the plug 401 will only fit into the port 303 in a specific orientation, thus ensuring that clamp

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403a will correspond to positive polarity, and clamp 403b will correspond to negative polarity, as indicated thereon. Additionally, the ring terminals 404a and 404b may be disconnected from the clamps and connected directly to the terminals of a vehicle battery. This feature may be useful, for example, to permanently attach the cables 302a-302b to the battery of a vehicle. In the event that the battery voltage becomes depleted, the handheld booster device 300 could be properly connected to the battery very simply by plugging in the plug 401 to the port 303.

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AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

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

an internal power supply;

~~an output device configured for connection to the vehicle battery, the output device having a positive polarity output device~~

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; [[and]]

~~a negative polarity output device~~

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 ~~vehicle~~ battery ~~isolation~~ presence sensor or circuit connected in a first circuit with the positive polarity ~~output device~~ battery terminal connector and the negative polarity ~~output device~~ battery terminal connector, the vehicle battery ~~isolation~~ presence sensor or circuit configured to detect a presence of the ~~vehicle~~ depleted or discharged battery when

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connected between the positive polarity ~~output device~~ battery terminal connector and the negative polarity ~~output device~~ battery terminal connector;

a reverse polarity sensor or circuit connected in a second circuit with the positive polarity ~~output device~~ battery terminal connector and the negative polarity ~~output device~~ battery terminal connector, the reverse polarity sensor configured to detect a polarity of the ~~vehicle~~ depleted or discharged battery connected between the positive polarity ~~output~~ battery terminal connector and the negative polarity ~~output~~ battery terminal connector;

a power switch or circuit connected in circuit between the internal power supply and ~~the~~ ~~output device~~ the positive and negative polarity battery terminal connectors; and

a microcontroller configured to receive ~~one or more input signals generated~~ a signal provided by the ~~vehicle~~ battery ~~isolation~~ presence sensor or circuit and receive another input signal provided by the reverse polarity sensor or circuit, and [[to]] provide an output signal to the power switch, ~~such that the power switch is turned on to connect the internal power supply to the output device in response to the one or more input signals from both the sensors indicating the presence of a vehicle battery connected to the output device and a proper polarity connection of positive and negative terminals of the vehicle battery with the positive and negative polarity output devices~~

wherein the power switch or circuit electrically switches the internal power supply to connect with the depleted or discharged battery only when the depleted or discharged battery is determined by the microcontroller to be present in response to the signal provided by the battery presence sensor or circuit and connected to the depleted or discharged battery with correct polarity in response to the signal provided by the reverse polarity sensor.

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2. (Previously Presented) The apparatus of claim 1, wherein the internal 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. (Currently Amended) The apparatus of claim 1, wherein the ~~vehicle isolation~~ battery presence sensor or circuit and the reverse polarity sensor or circuit comprise optically coupled isolator phototransistors.

6. (Currently Amended) The apparatus of claim 1, further comprising a plurality of power diodes coupled between the ~~output device~~ positive and negative battery terminal connectors and the and the ~~internal~~ power supply to prevent back-charging of the ~~internal~~ power supply from an electrical system connected to the ~~output device~~ 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 internal power supply and to provide a temperature signal to the microcontroller.

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

9. (Previously Presented) The apparatus of claim 1, further comprising a voltage regulator configured to convert output voltage of the internal 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 internal power supply to a USB-chargeable device.

11. (Previously Presented) The apparatus of claim 1, further comprising a USB charging port configured to provide charging power from an external power source to the internal power supply.

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.

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14. (Previously Presented) The apparatus of claim 13, wherein the microcontroller 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 internal 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 a vehicle battery is connected with reverse polarity.

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

19. (Previously Presented) 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 the output port when the vehicle battery isolation sensor is unable to detect presence of a vehicle battery.

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20. (Previously Presented) The apparatus of claim 19, wherein said microcontroller 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. (Currently Amended) The apparatus of claim 1, further comprising a jumper cable device, ~~including~~ the jump cable device comprising a plug configured to plug into an output port of the jump starting apparatus, ~~and~~ a pair of battery cables integrated with the plug at one end ~~thereof and being configured to be connected to terminals of a battery at another respective end thereof~~ 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. (Currently Amended) 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 ~~another end thereof with one of a battery terminal~~ opposite end to the respective positive and negative battery terminals of the depleted or discharged battery, or ~~a battery terminal clamp~~ connect to respective positive and negative battery clamps.

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

24. (Cancelled)

25. (Cancelled)

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26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (New) 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 the internal power supply and the positive and negative polarity battery terminal connectors; and

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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 the power switch,

wherein the battery presence sensor or circuit, reverse polarity sensor or circuit, and the microcontroller are configured to switch on the internal power supply to connect with the depleted or discharged battery only when the positive polarity battery terminal connector is connected to the positive polarity battery terminal of the depleted or discharged battery and the negative polarity battery terminal connector is connected to the negative polarity battery terminal of the depleted or discharged battery.

30. (New) 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 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 positive and negative battery 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

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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;

wherein the power switch control system or circuit switches on the power supply to connect the power supply to the depleted or discharged battery only when power switch control system or circuit detects both that the depleted or discharged battery is present and connected between the positive and negative battery connectors and the depleted or discharged battery is connected with a correct polarity between the positive and negative battery terminals.

31. (New) 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 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 correct polarity between the positive and negative battery terminals.

32. (New) 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.

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

34. (New) 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. (New) 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 connectors, and another sensor configured to detect polarity of the depleted or discharged battery when connected between the positive and negative battery connectors

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

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37. (New) The device according to claim 33, wherein microcontroller switches the power switch on 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 connected with the correct polarity.

38. (New) 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 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 positive and negative battery 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 polarity of the depleted or discharged battery when connected between the positive and negative battery terminal connectors;

wherein the power switch control system or circuit switches on the power supply to connect the power supply to the depleted or discharged battery only when the

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positive battery terminal connector is connected to the positive polarity battery connector of the depleted or discharged battery and the negative battery terminal connector is connected to the negative polarity battery connector of the depleted or discharged battery.

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REMARKS

The Examiner is invited to contact the undersigned representative with any questions or suggestions.

Claims 1-28 are pending in the application prior to entry of the above amendments to the claims.

Claims 1, 5, 6, 21, and 22 are amended above, and claims 29-38 are newly added. Support is provided by the originally filed specification, claims, and drawings. No new matter has been added.

The specification is amended above to provide literal support in the specification for the claimed term "battery presence sensor." The original specification describes "smart switch FET circuit 15 electrically switches the handheld battery booster lithium battery to the vehicle's electric system only when the vehicle battery is determined by the MCU 1 to be present (in response to a detection signal provided by isolation sensor 12) and connected with the correct polarity (in response to a detection signal provided by reverse sensor 10) at page 7, lines 13-16. Further, original claim 1 describes a sensor (e.g. vehicle battery isolation sensor) configured to detect presence of the battery (i.e. battery presence sensor).

The term "battery presence sensor" more clearly sets forth the particular sensor for detecting the presence of the depleted or discharged battery to be boosted or charged by the jump starting apparatus or device.

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The specification is further amended to provided literal support in the specification for the claimed terms “positive polarity battery terminal connector,” “negative polarity battery terminal connector,” and “positive and negative polarity battery terminal connectors.”

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CONCLUSION

The Examiner is invited to contact the undersigned representative with any questions or suggestions.

Applicant petitions for any extensions of time to timely file this Amendment and Response.

The Director is hereby authorized to charge any deficiency in fees filed, asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account 22-0585. Please credit any excess fees to such account.

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Date: March 6, 2020

Respectfully submitted,

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Attorney for Applicant

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Petitioner ADC (IPR2024-00577)

PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	Attorney Docket Number	054985.000055-US-05

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	Examiner Name	DIAO, M BAYE
	Attorney Docket Number	054985.000055-US-05

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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	Attorney Docket Number	054985.000055-US-05

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	Art Unit	2859
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	Attorney Docket Number	054985.000055-US-05

	1	PROJECTA; "2x22 Amp Hour High Performance Jumpstarter"; 2013; pages 1-20	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16450422
	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	2859
	Examiner Name	DIAO, M BAYE
	Attorney Docket Number	054985.000055-US-05

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/William L. Klima/	Date (YYYY-MM-DD)	2020-03-17
Name/Print	William L. Klima	Registration Number	32422

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2018-536789	JP	A	2018-12-13	THE NOCO COMPANY		☒
	2	108884801	CN	A	2018-11-23	THE NOCO COMPANY		☒
	3	3407405	EP	A1	2018-11-28	THE NOCO COMPANY		☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Examiner Name	DIAO, M BAYE
	Attorney Docket Number	054985.000055-US-05

	4	2527858	GB	A	2016-01-06	THE NOCO COMPANY		☐
	5	2010/129723	WO	A2	2010-11-11	ENERGY SAFE TECHNOLOGIES, INC.		☐
	6	2017/138963	WO	A1	2017-08-17	THE NOCO COMPANY		☐
	7	20 2013 102 599	DE	U1	2013-08-13	ASIA BRIGHT INDUSTRIAL HONG KONG CO		☒
	8	295 07 501	DE	US	1995-06-29	SEO SOLAR SONNENENERGIE OPPACH		☒
	9	20 2009 016 260	DE	U1	2010-03-25	TSAI MING WEI		☒
	10	10 2014 114 997	DE	A1	2016-01-07	THE NOCO COMPANY		☒
	11	2015258229	AU	A1	2016-01-28	THE NOCO COMPANY		☐
	12	2557733	GB	A	2018-06-27	THE NOCO COMPANY		☐
	13	2016392707	AU	A1	2017-11-30	THE NOCO COMPANY		☐
	14	11 2016 002 206	DE	T5	2018-03-15	THE NOCO COMPANY		☒

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	15	2 957 431	CA	A1	2017-08-11	THE NOCO COMPANY		☐
	16	2016269555	AU	B2	2017-01-05	THE NOCO COMPANY		☐
	17	2019201559	AU	A1	2019-03-28	THE NOCO COMPANY		☐
	18	3 005 971	CA	A1	2017-08-17	THE NOCO COMPANY		☐
	19	2562950	GB	A	2018-11-28	THE NOCO COMPANY		☐
	20	2019201081	AU	A1	2019-03-07	THE NOCO COMPANY		☐
	21	2017217661	AU	B2	2018-11-15	THE NOCO COMPANY		☐
	22	2019201559	AU	A1	2019-03-28	THE NOCO COMPANY		☐

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Name/Print	William L. Klima	Registration Number	32422

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EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	38891657
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Renee Tisdale
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985-000055-US-05
Receipt Date:	17-MAR-2020
Filing Date:	24-JUN-2019
Time Stamp:	16:28:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	IDSPART1.pdf	1446073 b2d257e43c8f2390616dce7e3ed856767ec91010	no	11

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	IDSPART2.pdf	1760740 20c37371e3e56ed03c3f945a677e768042b965e9	no	6

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PLUS Search Results for S/N 16450422, Searched Mon Jun 08 13:40:37 EDT 2020

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

6014030 99	4379267 98	4818340 98
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EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PLUS Search Results for S/N 16450422, Searched Tue Jul 28 14:26:13 EDT 2020

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

6014030 99	4379267 98	4818340 98
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5539820 98

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UNITED STATES DEPARTMENT OF COMMERCE
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

23230 7590 08/12/2020
Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
WASHINGTON, DC 20006-1152

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DIAO, M BAYE	

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
08/12/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patlaw@vorys.com

Office Action Summary	Application No. 16/450,422	Applicant(s) Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 24 June 2019.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-23 and 29-38 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-23 and 29-38 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☑ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 24 June 2019 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date 06/24/2019 and 03/17/2020.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. Acknowledgement is made of application #16/450,422 filed on 06/24/2019 in which claims 1-26 have been presented for examination.

Response to Amendment

3. Acknowledgement is made of preliminary amendment filed on 10/17/2019 in which claims 1-11,13-23,25-26 have been amended while claims 27-28 have been newly added. By this amendment, claims 1-28 are now pending in the application.

4. Acknowledgement is made of further preliminary amendment filed on 03/06/2020 in which claims 1,5-6,21-22 have been amended, claims 24-28 have been canceled while claims 29-38 have been newly added. **By this amendment, claims 1-23,29-38 are now pending in the application for prosecution in a first action on the merits.**

Information Disclosure Statement

5. The information disclosure statements (IDS) submitted on 06/24/2019 and 03/17/2020 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Claim Objections

6. Claim 33 is objected to because of the following informalities: Claim 33 recites: "The device according to claim 33,…" is in an improper dependency format as claim 33 cannot depend from itself. For examination purpose, "The device according to claim 33,…" would read -- The device according to claim **30**,…--

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7. Claim 37 is objected due to minor informalities: Claim 37 recites: "The device according to claim 33, wherein microcontroller switches the power switch on 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 connected with the correct polarity."

8. For examination purpose, claim 37 would read -- The device according to claim 33, wherein the microcontroller switches the power switch on 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 connected with the correct polarity. --

9. Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of 35 U.S.C. 112(d):

> (d) REFERENCE IN DEPENDENT FORMS.—Subject to subsection (e), a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

The following is a quotation of pre-AIA 35 U.S.C. 112, fourth paragraph:

> Subject to the following paragraph [i.e., the fifth paragraph of pre-AIA 35 U.S.C. 112], a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

11. Claims 33-37 are rejected under 35 U.S.C. 112(d) or pre-AIA 35 U.S.C. 112, 4th paragraph, as being of improper dependent form for failing to further limit the subject matter of the claim upon which it depends, or for failing to include all the limitations of the claim upon which it depends. Claim 33 recites: "The device according to claim 33,…" is in an improper dependency format as claim 33 cannot depend from itself.

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12. Applicant may cancel the claim(s), amend the claim(s) to place the claim(s) in proper dependent form, rewrite the claim(s) in independent form, or present a sufficient showing that the dependent claim(s) complies with the statutory requirements.

13. Claims 34-37 depend either directly or indirectly from claim 33 and thus are rejected for the same reasons.

Claim Rejections - 35 USC § 102

14. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.
>
> (a)(2) the claimed invention was described in a patent issued under section 151, or in an application for patent published or deemed published under section 122(b), in which the patent or application, as the case may be, names another inventor and was effectively filed before the effective filing date of the claimed invention.

16. Claim(s) 1,7-9,15,17-20,23,29-38 are rejected under 35 U.S.C. 102(a)(1)|(a)(2) as being anticipated by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387).

17. Regarding claims 1,29-30, and 38: Richardson discloses A jump starting apparatus**(Abstract;¶[0001])** configured for boosting or charging a depleted or discharged battery**(22)(¶[0006])** having a positive polarity battery terminal**(Red clamp; Fig. 2.C)** and a negative polarity battery terminal**(black clamp)(Note-jumper cable 60 has red (positive) and**

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black (negative) clamps. (EX1010 at ¶[0020]); Richardson discloses "a pair of conductive leads for connecting the supplemental power to an engine electrical system), the jump starting apparatus comprising: an internal power supply**(jump starter batteries 22 provide power to the battery of the vehicle(28) to be jump started; see ¶[0006] and Fig. 2C**); a positive polarity battery terminal connector**(labeled Red clamp; Fig. 2.C)** configured **(via cables 60**)for connecting the jump starting apparatus to the positive polarity battery terminal of the depleted or discharged battery**(battery of vehicle 28; see Fig. 2C**); a negative polarity battery terminal connector**(labeled black clamp; Fig. 2.C)** configured **(via cables 60**)for connecting the jump starting apparatus to the negative polarity battery terminal of the depleted or discharged battery**(battery of vehicle 28**)**(note- Richardson discloses that the jumper cables have a positive and negative polarity, see ¶[0012]) ("a reverse voltage sensor 24 monitors the polarity of the jumper cables on line 26")**; a battery presence sensor or circuit**(construed as vehicle voltage sensor 30 which consists of two resistors and a capacitor as shown in Fig. 2B below. Furthermore, these two resistors are connected to vehicle battery 28 via the line designated as Q which as shown in Fig. 2A connects directly to line A shown in Fig.2C and which provides an output signal via line I. These resistors are connected to vehicle battery 28 via the line designated as Q which as shown in Fig. 2A connects directly to line A shown in Fig. 2C and which provides an output signal via line I)** connected in a first circuit with the positive polarity battery terminal connector and the negative polarity battery terminal connector, the vehicle battery presence sensor or circuit**(30)** configured to detect a presence of the depleted or discharged battery when connected between the positive polarity battery terminal connector and the negative polarity battery terminal connector**(note-Richardson discloses that voltage sensor 30 detects whether or not the jumper cables are connected to the vehicle battery.**

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For example, Richardson states that "[i]f the system detects an increase in the difference between the measured jump starter battery voltage 20 and the voltage measured 30 across the contact relay 34 indicating that one of the jumper cables has been disconnected 302 from the vehicle's battery system or starter system 28 then a jumper cable unplugged error count is incremented 304". (EX1010 at ¶[0033]); a reverse polarity sensor**(24)** or circuit**(note reverse voltage sensor 24 monitors the polarity of the jumper cables on line 26 which are connected to the vehicle's electrical system 28." (EX1010, ¶[0012]; see also ¶[0020] ("once jumper cables 60 have been connected to the vehicle to be started 28, the voltage is measured by reverse voltage sensor 24 to determine if the cables have been properly connected to the vehicle 214")** connected in a second circuit**(Reverse voltage sensor 24 is shown on Fig. 2B and consists of 5 resistors connected in sequence, a capacitor, and further connected to component operational amplifier LMC6484, which is connected to line Q and which provides an output signal on line H)** with the positive polarity battery terminal connector and the negative polarity battery terminal connector, the reverse polarity sensor**(24)** configured to detect a polarity of the depleted or discharged battery connected between the positive polarity battery terminal connector**(red clamp)** and the negative polarity battery terminal connector**(black clamp) (¶[0014] ("A reverse voltage LED 48 is illuminated when the microprocessor 12 determines that a reverse voltage jumper cable voltage is detected by reverse voltage sensor 24"). Importantly, the circuitry which forms reverse voltage sensor 24 is separate and distinct from the circuity forming vehicle voltage sensor 30. (see Fig. 2B). Furthermore, reverse voltage sensor 24 and vehicle voltage sensor 30 produce separate and distinct signals which are transmitted to microprocessor 12 on separate and distinct lines H and I respectively. (EX1010 at Fig.2B)**; a power switch **(contact relay 34)**or

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circuit connected in circuit**(see Figs. 1 & 2C)** between the internal power supply**(22)** and the positive and negative polarity battery terminal connectors**(red and black clamps of cable 60)**; and a microcontroller**(12)** ***(or power switch control system or circuit)(as per claims 30 and 38)*** configured to receive a signal**(output by vehicle voltage sensor 30 at as I and input at pin 34 at ADC3; see Figs. 2B & 2D)** provided by the battery presence sensor or circuit**(30)** and receive another input signal**(H at pin 32 at ADC5 see Figs. 2B & 2D)** provided by the reverse polarity sensor**(24)** or circuit, and provide an output signal**(58)** to the power switch**(34)**, wherein the power switch or circuit electrically switches the internal power supply**(22)** to connect with the depleted or discharged battery**(battery of vehicle 28)** only when the depleted or discharged battery is determined by the microcontroller**(12)** to be present in response to the signal provided by the battery presence sensor**(30)** or circuit and connected to the depleted or discharged battery with correct polarity in response to the signal provided by the reverse polarity sensor**(24)(note- Richardson discloses that "a programmable microprocessor 12 which receives inputs 14 and produces information outputs 16 and control outputs 18." (¶[0011]). It uses the term microprocessor and microcontroller interchangeably throughout the specification. (¶[0015] and Fig. 1) As shown in Fig. 1, inputs 14 include input signals from reverse voltage sensor 24 and vehicle voltage sensor 30, and outputs 18 and 58 which is directed to contact relay 34. (EX1010 at Fig. 1, ¶[0014]) ("A reverse LED 48 is illuminated when the microprocessor 12 determines that a reverse voltage jumper cable voltage is detected by reverse polarity sensor 24 . . . A fault LED 56 is turned on any time the microprocessor 12 detects any operational, sensor or internal fault . . . A contact relay control output 58 operates the contact relay 34. When the jump starter operation has been successfully initiated, the contact relay 34 is closed"). Furthermore, as discussed above, Fig.**

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2C clearly shows line H which carries a signal from reverse voltage sensor 24 and line I which carries a signal from vehicle voltage sensor 30. (see also Fig. 2C). Figure 2D shows an image of the microcontroller which includes inputs H and I. (Fig. 2D). Richardson further discloses (see ¶[0015] that Richardson discloses that the microcontroller receives signals from the vehicle voltage sensor 30 and the reverse voltage sensor 24 and that it generates a control signal 58 which controls the contact relay 34 to connect the jump starter batteries 22 to the vehicle to be starter 28. Richardson also makes clear that the microcontroller only closes relay 34 if the reverse polarity sensor 24 and vehicle voltage sensor 30 indicate the presence of a vehicle battery connected with proper polarity. For example, Richardson states that "when the jump starter 10 is initially powered on 200, the microprocessor initializes the hardware . . . . then performs a self-test operation 208 where . . . all sensors 20, 24, 30, 32, 38, 40 . . . are tested". Richardson further discloses The process of measuring the vehicle battery voltage necessarily entails detecting the presence of a vehicle battery connected to the positive and negative output ports since reading a sufficiently low voltage would Page 72 70 indicate either the absence of a vehicle battery or a battery with a voltage below a required threshold for detection. Only after the reverse polarity and battery presence tests have been conducted at steps 214 and 252 does the process proceed to step 268 where microprocessor 12 sends a signal to close contact relay 34. (See also Fig. 3, Fig. 6, see also ¶[0014] and [0027])

18. Therefore claims 1,29 and 30 are clearly anticipated.

19. Regarding claim 31, Richardson discloses all the claimed invention as set forth and discussed above in claim 31. Richardson further discloses, wherein the power switch control system or circuit**(12)** does not switch on the power supply to connect the power supply**(22)** to the

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depleted or discharged battery**(battery of vehicle 28 that is to be jump started)** when power switch control system or circuit**(12)** detects either that (i) the depleted or discharged battery is absent**(as detected by vehicle battery presence detector 30)** or not connected between the positive and negative battery connectors and (ii) the depleted or discharged battery is not connected with a correct polarity between the positive and negative battery terminals**(as determined by reverse polarity detection sensor 24)(see also ¶[0014] and [0027]**).

20. Regarding claim 32, Richardson discloses all the claimed invention as set forth above in claim 30. Richardson further discloses, wherein the power switch control system or circuit**(12)** is configured to detect presence **(via signal output by voltage sensor 30 and input into control system or circuit 12)** of the depleted or discharged battery**(battery of vehicle 28)** when connected between the positive and negative battery connectors**(red and black clamps)** and to detect polarity**(via signal output by reverse polarity sensor 24 into control system or circuit 12)** 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**(see ¶[0012],[0014]**).

21. Regarding claim 7, Richardson discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a temperature sensor**(38)(Fig. 1)(¶[0013]** configured to detect temperature of the internal power supply**(jump starter's batteries)** and to provide**(see signal output by 38 and fed into 12 in Fig. 1)** a temperature signal to the microcontroller**(12)**.

22. Regarding claim 8, Richardson discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a voltage measurement circuit**(20)(see Fig. 1; ¶[0012]**) configured to measure output voltage of the

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internal power supply**(jump starter batteries 22)** and to provide a voltage measurement signal**(output signal of 20 fed into 12)** to the microcontroller**(12)(see Fig. 1)**.

23. Regarding claim 9, Richardson discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a voltage regulator**(Fig. 2A; regulator LM7805 is a 5V regulator although not labeled)** configured to convert output voltage of the internal power supply**(22)** to a voltage level appropriate to provide operating power to internal components of the jump starting apparatus.

24. Regarding claim 15, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses a plurality of visual indicators **(LED 54 and LCD 46)** to indicate to a user battery capacity. For example, Richardson states: **"If the voltage level of the system batteries 22 measured by the voltage sensor 30 is equal to a state of charge of eighty percent or more below a fully charged voltage level 222, an error flag is set and the event recorded in memory 224. The charge battery LED 54 is illuminated and the LCD 46 displays a "Charge Battery" message 225." Ex. 1010, ¶[0021]. Thus, the two visual indicators (LED 54 and LCD 46) in Richardson display remaining capacity status of said internal power supply (a state of charge of eighty percent or more below a fully charged voltage level). Furthermore Richardson discloses "[a] "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210." Ex. 1010, ¶[0020]. Thus, the "Reverse Polarity" error message on the LCD 46 and illuminated LED 48 warn a user when a vehicle battery is connected with reverse polarity, prompting the user to correct the connection).**

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25. Regarding claim 17, Richardson teaches or discloses all the limitations of claim 1. Richardson further discloses "[a] "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210." Richardson, **¶([0014],[0020]).** Thus, the "Reverse Polarity" error message on the LCD 46 and illuminated LED 48 warn a user when a vehicle battery is connected with reverse polarity, prompting the user to correct the connection.

26. Regarding claim 18, Richardson teaches or discloses all the limitations of claim 1. Richardson further discloses, the apparatus further comprising "separate visual indicators configured to display the power on status of the apparatus, and the jump start boost power status of power supplied to said output port **(note LCD display 46 allows a start message)the power on status) when the jump starter is powered on. Richardson further discloses ""[r]eferring to FIGS. 2A, 2B, 2C, 2D and 3-8, when the jump starter 10 is initially powered on 200, the microcontroller 12 initializes the hardware, reads all system parameters and variables, and initializes the interrupt service routine 202 (See FIG. 8). All stored performance history is read from the onboard, non-volatile memory 204 and a start message is displayed 206 on the LCD display 46." Richardson, ¶0015. The start message displayed on the LCD display comprises a visual indicator configured to display the power on status of the apparatus. Additionally, Richardson discloses a separate visual indicator displaying the jump start boost power status of power supplied to the output port. For example, Richardson states "[i]f the voltage level of the jump starter batteries 22 drop below a value of twenty percent of the normal level, a charge battery LED 54 is illuminated."(¶[0014],[0020]).**

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27. Accordingly, claim 18 is anticipated.

28. Regarding claim 19, Richardson discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a manual override switch configured to activate a manual override mode to enable a user to connect jump start power to the output port when the vehicle battery isolation sensor is unable to detect presence of a vehicle battery(**note- the jump starter apparatus 10 also includes automatic (42) and manual (44) pushbutton inputs to accept user input to select either automatic or manual operation; see ¶[0013]-[0016];[0025]-[0026], and [0039]**).

29. Regarding claim 20, Richardson discloses all the claimed invention as discussed and set forth above in claim 19. Richardson further discloses, wherein said microcontroller(**12**) is configured to detect actuation of the manual override switch(**44**) for at least a predetermined period of time before activation of the manual override mode(**see ¶[0039],[0041]-[0042]**).

30. Regarding claim 33, assuming proper dependency from claim 30, Richardson discloses all the claimed invention as set forth and discussed above in claim 30. Richardson further discloses, wherein the power switch control system or circuit comprises a microcontroller(**system microcontroller 12; Fig. 1**) configured for providing an output(**58**) controlling the power switch(**contact relay 34**)(**note-A contact relay control output 58 operates the contact relay 34. When the jump starter operation has been successfully initiated, the contact relay 34 is closed and the jump starter batteries 22 are connected to the starter system or batteries of the vehicle to be started 28. The contact relay 34 is opened when a successful start cycle has been completed; see¶[0014]**).

31. Regarding claim 34, Richardson discloses all the claimed invention as set forth and discussed above in claim 33. Richardson further discloses, wherein the microcontroller(**12**)

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receives input**(14)(see ¶[0011])** from one or more sensors**(20,24,30,32,38,40)** configured to detect presence**(via vehicle presence detector sensor 30)(see ¶[0012])** of the depleted or discharged battery**(battery of vehicle 28)** when connected between the positive and negative battery connectors**(black and red clamps)** and to detect polarity**(via sensor 24)** of the depleted or discharged battery when connected between the positive and negative battery connectors.

32. Regarding claim 35, Richardson discloses all the claimed invention as set forth and discussed above in claim 34. Richardson further discloses, wherein the one or more sensors includes one sensor**(30)** configured to detect presence of the depleted or discharged battery when connected between the positive and negative battery connectors, and another sensor configured to detect polarity**(24)** of the depleted or discharged battery when connected between the positive and negative battery connectors**(red and black clamps of cables 60)(see Figs. 2A-2D).**

33. Regarding claim 36, Richardson discloses, wherein the one or more sensors comprises one or more sensing circuits**(20,24,30,32,38,40)(see ¶[0011] and see Figs. 2A-2C for the different sensor circuits 20, ,24, 30, 32, 38,and 40)**.

34. Regarding claim 37, Richardson discloses all the claimed invention as set forth and discussed above in claim 33. Richardson further discloses, wherein the microcontroller**(12)** switches the power switch**(34)** on to provide power from the power supply**(jump starter batteries)(22)** to the depleted or discharged battery**(battery of vehicle 28)** only when the depleted or discharged battery is determined by the microcontroller**(12)** to be present and connected with the correct polarity**(see¶[0012],[0014])(Note- Richardson discloses that the power switch is turned on to cause the internal power supply to be connected to the output port in response to signals from the sensors indicating (1) the presence of a vehicle battery at said output port and (2) proper polarity connection of positive and negative terminals of**

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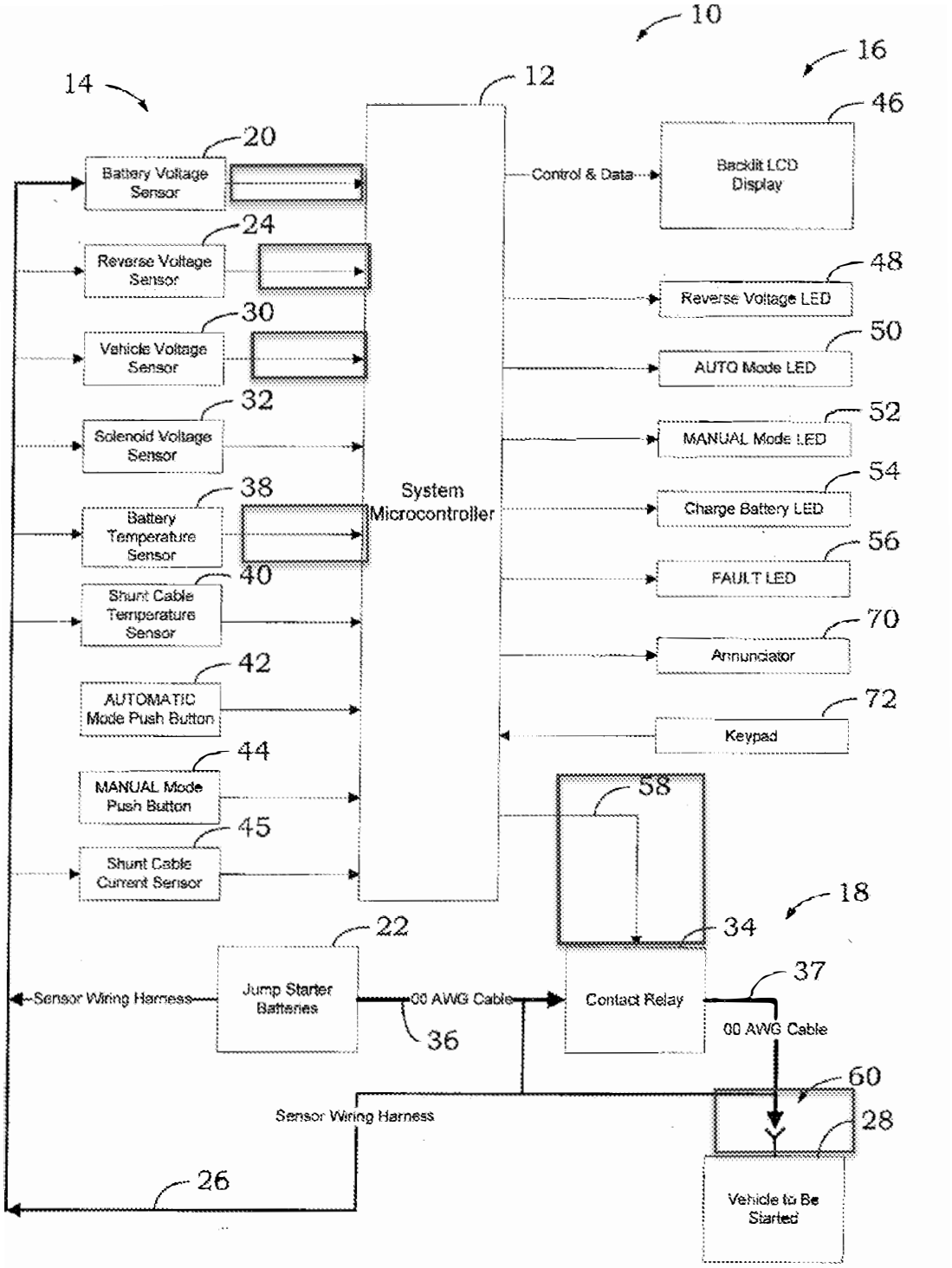
said vehicle battery with said positive and negative polarity outputs. Richardson also discloses or teaches that the power switch is not turned on when signals from the sensors indicate either the absence of a vehicle battery at the output port or improper polarity connection of positive and negative terminals of the vehicle battery with the positive and negative polarity outputs. Richardson discloses in FIGS. 3-8 "flow charts of the processing steps of the portable power source of the present invention." Ex. 1006, ¶0010. This sequence of processing steps involves several checks performed by the microcontroller before turning on the power switch to jump start the vehicle. As discussed below, these checks include detecting (1) the presence of a vehicle battery at said output port and (2) proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs. 77. Richardson discloses that the reverse voltage sensor 24 detects whether jumper cables that have been manually connected to the vehicle battery have been properly connected or if there is a reverse connection. Richardson discloses or teaches that the power switch for charging the vehicle battery cannot be turned on unless there is a proper connection of the cables. For example, referring to FIG. 3 (a portion of which is reproduced below), Richardson states: If the system does not detect a battery charging voltage 212, once jumper cables 60 have been manually connected to the vehicle to be started 28, the voltage is measured by the reverse voltage sensor 24 to determine if the cables have been properly connected to the vehicle 214. If the voltage measured is significantly less than the voltage of the jump starter capacitors 21 and batteries 22, then a reverse polarity connection of the jumper cables to the vehicle is determined and an error flag is set and the event saved in nonvolatile memory 216. A "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse

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voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210. Ex. 1010, ¶[0020]).

35. **Accordingly claims 1,7-9,15,17-20,23,29-38**

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Richardson's *Fig. 1* reproduced above

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Claim Rejections - 35 USC § 103

36. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

37. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

38. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

39. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date

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of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

40. **Claims 2-3,10-14,21,23 are rejected under 35 U.S.C. 103 as being unpatentable over by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Xinfang USPAT 9,506,446 (Exhibit 1008 IPR2020-01387).**

41. Regarding claim 2, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However, Richardson stay silent about the battery type of the jump starter battery and does not expressly teach the limitations, "wherein the internal power supply comprises a lithium ion battery".

42. Xinfang is an analogous art and pertains to the same field of endeavor namely mini portable jump starter that can be carry in a pocket by a user**(Xinfang; col. 9, lines 1-8).**

43. Xinfang further discloses an internal lithium battery **(Col.1, lines 67- col. 2, line 1).**

44. It 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 by having the internal power supply comprises a lithium-ion battery into the jump apparatus of Richardson. The advantages for doing so is that lithium ion batteries present numerous advantages such as high energy density, excellent cycle characteristics, safety under various operating environments, and long-term reliability.

45. Regarding claim 3, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 2. Xinfang further discloses, wherein the lithium ion battery comprises a battery pack of multiple lithium ion batteries **(Xinfang further discloses the use of a battery cell (which can be lithium ion) comprised of four battery cells. (EX1008 at col.5, lines 9-11)**.

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46. Regarding claim 10, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However Richardson fails to expressly disclose the apparatus further comprising a USB output port configured to provide charging power from the internal power supply to a USB- chargeable device.

47. Xinfang discloses the use of a USB output module **(having a USB output port configured to provide charging power from the internal power supply to a USB-chargeable device)** in which a USB cable connects the battery module to an electronic device. **(Xinfang; col. 4, lines 59- 62).**

48. It would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to have combined known USB output port configured to provide charging power from the internal power supply to a USB-chargeable device with the battery jump starter of Richardson, as recited, to allow the device to offer a standardized charging interface for charging other electronic devices without requiring specialized plugs.

49. Accordingly claim 10 would have been obvious.

50. Regarding claim 11, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However Richardson fails to expressly disclose the apparatus further comprising a USB charging port configured to provide charging power from an external power source to the internal power supply.

51. Xinfang is an analogous art and pertains to the same field of endeavor namely mini portable jump starter that can be carry in a pocket by a user**(Xinfang; col. 9, lines 1-8).**

52. Xinfang discloses factual evidence of a USB charging port**(34)** configured to provide charging power from an external power source**(external charging circuit adaptor)** to the internal power supply**(16)(Xinfang; col. 4, lines 52-58)**.

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53. It 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.

54. Accordingly claim 11 would have been obvious.

55. Regarding claim 12, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However Richardson fails to expressly disclose the apparatus further comprising a flashlight circuit configured to provide a source of light to a user.

56. Xinfang discloses factual evidence of a portable jump starter that utilizes a flashlight circuit configured to provide a source of light to a user. **(Xinfang col.1, lines 45-47 ("The present invention according to an embodiment provides a mobile power bank, vehicle ignition system jump starter, and a flashlight."), see also col. 4, lines 24-25 ("The second plate 24 may be provided with a master control button 26 and a flashlight 28")**. Xinfang also discloses the use of flashlight to provide a SOS signal in an emergency situation. **(Xinfang; col. 8, lines 37-44).**

57. Therefore, it would have been obvious to a person of ordinary skill that a user may need to use the portable jump starter in situations where there is not sufficient light. Furthermore, it would have been obvious to combine the LED flashlight of Xinfang with Richardson as it provides a portable battery jump starter the ability to better observe connectors in the vehicle and LED flashlights and thereby minimize possible wrong and reverse polarity connection of the cables in an absence of sun light or in period of darkness.

58. Accordingly claim 12 would have been obvious.

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59. Regarding claim 13, modified Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 12. Richardson further discloses several illuminating means including at least one LED**(Richardson; ¶[0014]).**

60. Regarding claim 14, modified Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 13. Xinfang further discloses, wherein the microcontroller is configured to control the at least one LED to provide a visual alarm indicating an emergency situation. Note-Xinfang discloses the use of a flashlight to provide a SOS signal in an emergency situation. **(Xinfang col.8, lines 37-44 ("After turning on the flashlight 28, if the control module 58 detects that the master control button 26 is activated, it may control the flashlight in multiple illumination modes, such as a constant light mode, flashing strobe light mode, and flashing S.O.S. (three sequential short flashes, followed by three sequential long flashes, followed again by three sequential short flashes) signal light mode").**

61. Therefore it would have been obvious to one of ordinary skill in the art to combine the teachings of Xinfang with those of Richardson to include a LED flashlight and configure it to provide a visual alarm indicating an emergency situation so as to warn the user in an emergency situation.

62. Accordingly claim 14 would have been obvious.

63. Regarding claim 21, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, the apparatus further comprising a jumper cable device**(60) (via red and black clamps see Fig. 2C**) but does not teach the jumper cable device including a plug configured to plug into said output port, a pair of cables integrated with the plug at one respective end thereof and being configured to be connected to terminals of a battery at another respective end thereof.

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64. Xinfang discloses a jumper cable with a plug at one end and a pair of cables at the other end configured to be connected to terminals of a battery. (Xinfang; col. 2, lines 40-43 ("Optionally, the apparatus further comprises a vehicle ignition cable having a first end coupleable to the ignition output port and a second end coupleable to terminals of a vehicle battery"). Therefore, it would have been obvious to one of ordinary skill in the art to combine Xinfang's jumper cables with Richardson's jump starter apparatus to provide a connection to the vehicle battery, in particular because jumper cable devices were widely known long before the effective filing date of the claimed invention since the technology and performance of jumper cables was well known and the combination would have yielded predictable results.

65. Accordingly claim 21 would have been obvious.

66. Regarding claim 23, Richardson in view of Xinfang discloses all the claimed invention as discussed and set forth above in claim 21. Xinfang further discloses, wherein the output and the plug are dimensioned so that the plug will fit into the output port**(46)** only in one specific orientation**(Xinfang; Fig. 2)**.

67. **Claims 22 is rejected under 35 U.S.C. 103 as being unpatentable over by 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 Richardet Jr. USPAT 8,172,603 (Exhibit 1014 IPR2020-00944).**

68. Regarding claim 22, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 21. However the combination of Richardson in view of Xinfang fails to expressly teach, the limitations of, "wherein the jumper cable device further comprises a pair of ring terminals configured to respectively connect the pair of cables at the

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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".

69. Richardson and Richardet both relate to jump starting vehicle engines. Ex. 1014 at 2:33-36. Richardet discloses "means to provide a battery terminal connection which provides secure and stable connection to a motor vehicle battery or the like adaptable to a variety of common scenarios and which is simple and quick for an average user." **(Richardet; col. 1, lines 60-65).**

70. Richardet further discloses and shows in **Fig. 2A,** discloses a pair of ring terminals 23 to connect a pair of cables 24, 25 with battery terminals 120 and 130 **(Richardet; col. 4, lines 57-65**).

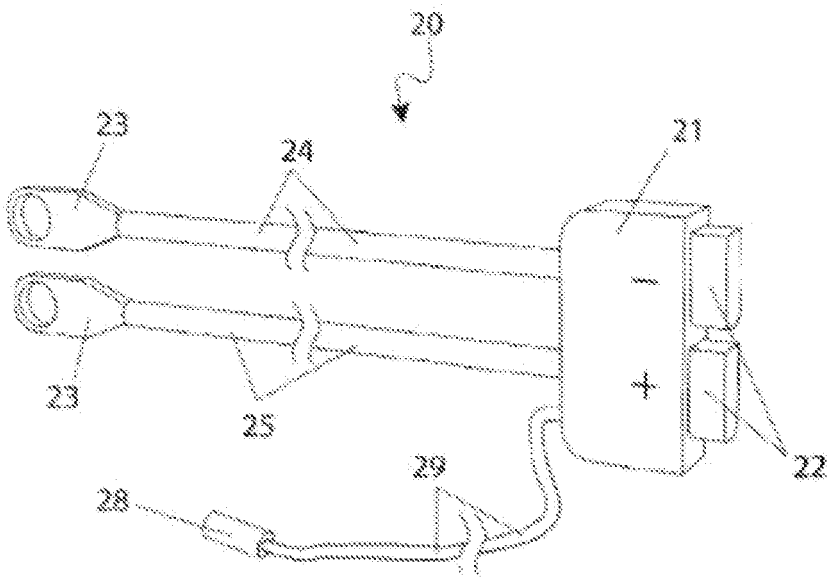


Fig. 2a

Therefore it would have been obvious to one having 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 another advantageous way of connecting cabling to a battery. A

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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**).

71. Accordingly claim 22 would have been obvious.

72. **Claims 16 are rejected under 35 U.S.C. 103 as being unpatentable over by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Baxter (Exhibit 1011 IPR2020-00944)(all cited by Applicants).**

73. Regarding claim 16, Richardson discloses all the claimed invention as set forth and discussed above in claim 15. However, Richardson does not expressly teach, "wherein said plurality of visual indicators comprises a plurality of LEDs providing output light of different colors."

74. Baxter discloses a plurality of LEDs providing output light of different colors to indicate a variety of conditions. For example, Baxter states: For example, if proper connection conditions are detected and it is determined that it is safe to make a connection, the logic circuit or microcontroller 26 can activate a green LED as a signal of proper connection prior to or concurrent with making an electrical connection between the two low- voltage circuits connected to the input terminals 20 and the output terminals 22. Alternatively, a red LED might be activated if an improper connection is detected, along with activation of the alarm 30. Different signals **(via the alarm 30 and/or the optical signal 32 or optical signals 32)** may be used to indicate different detected conditions **(e.g. reversed polarity, no connection, short circuit, etc.). (Baxter col. 10, lines 24-31 and col. 12, lines 18-29**).

75. Therefore, Baxter utilizes a plurality of LEDs providing output light of different colors to indicate a variety of conditions in the battery charger. It would have been obvious to one of

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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 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.

76. Accordingly claim 16 would have been obvious.

77. Claims 10-11 are rejected under 35 U.S.C. 103 as being unpatentable over by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Epower-20 Brochure(IPR 2020-00944 Exhibit 1012).

78. Regarding claim 10, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However Richardson fails to expressly disclose the apparatus further comprising a USB output port configured to provide charging power from the internal power supply to a USB-chargeable device.

79. Epower-20 brochure further discloses a USB charging circuit connecting the USB charging port to the power supply**(see Exhibit 1012 at 1 where two USB ports are shown in front of the flashlight)**. Furthermore, The "Specification/data sheet" of the Epower-20 brochure states the "Output" includes "5V/2A, 5V/1A ---mobile phone, tablet PC, other digital devices." One of ordinary skill in the art would understand that the 5V/2A and 5V/1A outputs described and shown are USB outputs for charging mobile phones and other devices from the internal power supply of the jump starter battery.

80. It would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to have incorporate a USB output port configured to provide charging power from the internal power supply to a USB-chargeable device into the apparatus of

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Richardson so as to provide additional convenience to users to provide charging power for their mobile phones and other devices.

81. Regarding claim 11, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However Richardson fails to expressly disclose the apparatus further comprising a USB charging port configured to provide charging power from an external power source to the internal power supply.

82. The Epower-20B is an analogous art and discloses factual evidence of jump starters with USB output ports to charge other devices. The Epower-20B shows below a "14V 1A" "Input" port for charging the jump starter with a "Home charger**" ("Input: AC/100V-240V, Output: DC/14V1A").**

83. It 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 USB charging port providing charging power from an external power source to the internal power supply 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.

84. Accordingly claim 11 would have been obvious.

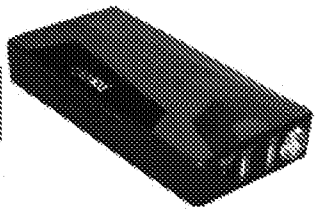
EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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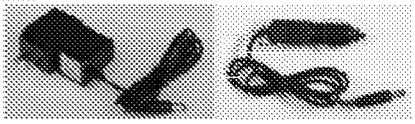
SHENZHEN CARKU TECHNOLOGY CO.,LTD
Tel: 0086 755 23063587-877 E-mail: sales10@car-ku.com

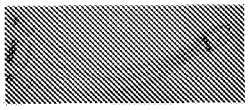
Model: E-Power-20B

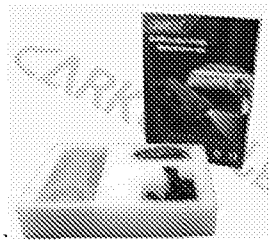
Specification	
Description of goods	Fast car charger
Battery Capacity	37Wh(7500mAh)
Dimension	155*74*31.5mm
Weight	330g
Output	5V/2A、5V/1A ---mobile phone, tablet PC, other digital devices 15V/10A ---car fast charge
Input	14V/1A
Operation Temp.	-20℃~60℃/-4℉~140℉
Time to charge car battery	About 8minutes in fully discharge



Standard Accessories	
1pc Home charger	Input: AC/100V-240V 、Output: DC/14V1A
1pc Car charger	Input / Output: DC 15V10A
1pc User Manual	



Accessories for Option		
3-in-1 Mobile Phone Cable	Micro USB, iPhone4, iPhone5	

Packing	
Individual Packing : EVA case+ Color box Size：26.5*19*8cm Whole set Weight: 1KG	
Carton	Size : 39.3*32*28cm, 0.07cbm/CTN Packing Rate: 10sets/CTN G.W.= 10 KG

Ex. 1012
Shenzhen Carku Technology Co. Ltd.
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85. **Claims 4-5 are rejected under 35 U.S.C. 103 as being unpatentable over by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Krieger et al., (Krieger) US 2004/0130298.**

86. Regarding claim 4, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However Richardson fails to expressly disclose the limitations of, wherein the power switch comprises one or more FETs.

87. Krieger is an analogous art and pertains to the same field of endeavor, namely battery jump starters for vehicle engines and discloses factual evidence of, wherein the power switch comprises one or more FETs**(12a-12d)(see Krieger; ¶[0030] and Fig. 5).**

88. It would have been obvious to one having 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 because of numerous advantages such as their fast switching speeds, their low loss, and are preferably high power, and very low on-resistance types.

89. Accordingly claim 4 would have been obvious.

90. Regarding claim 5, Richardson discloses all the claimed invention as discussed and set forth above in claim 1. However, Richardson does not expressly teach the limitations of, "wherein the battery presence sensor or circuit and the reverse polarity sensor or circuit comprise optically coupled isolator phototransistors".

91. Krieger further discloses, wherein the battery presence sensor or circuit**(16)** and the reverse polarity sensor or circuit**(also performed by 16)** comprise optically coupled isolator phototransistors **(22)(see Fig. 4;¶[0032],[0038])(see also ¶[0033])(note- the opto-isolator (16) only turns on when it is properly biased "as a result of a correct polarity connection being**

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made between the boosting battery (2) and the depleted battery (11). By detecting the correct connection of the depleted battery (11), Krieger also necessarily and implicitly detects that the depleted battery (11) is present).

92. Therefore, Krieger discloses or teaches that an opto-isolator can perform the functions of both the vehicle isolation sensor or circuit and reverse polarity sensor or circuit.

93. It would therefore be obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to use one opto-isolator of the type as disclosed by Krieger into the jump starter apparatus of Richardson to sense both the presence of a vehicle battery and a correct polarity connection thereby preventing any other current flow and allow for safe removal of the alligator clamps, as per the teachings of Krieger**(see ¶[0038],[0041]).**

94. **Claims 6 is rejected under 35 U.S.C. 103 as being unpatentable over by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Wanzong et al., (Wanzong) USPAT 5,319,298(all cited by Applicants).**

95. Regarding claim 6, Richardson discloses all the claimed invention as set forth and discussed above in claim 1 but fails to expressly teach the limitations of, the apparatus 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.

96. Wanzong is an analogous art**(abstract)** and discloses factual evidence of a battery maintainer and charger apparatus for battery vehicles**(col. 2, lines 59-67)**. Wanzong discloses an "isolation diode 160," which acts as the power diodes to prevent back-charging of said internal power supply from an electrical system connected to said output port. As shown in **Fig. 1** of the reference**(see Fig. 1 of Wanzong),** the isolation sensor **160** is between the output

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port **(output terminals 170 and 180)** of the charger apparatus and the internal power supply **(transformer 20/ full wave bridge rectifier 30/main capacitor 40**). While Wanzong discloses a single power diode**(160),** it would have been obvious to one having 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 to prevent back-charging and damage to the charging circuit during or after charging process.

97. Accordingly claim 6 would have been obvious.

Conclusion

98. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M'BAYE DIAO whose telephone number is (571)272-6127. The examiner can normally be reached on M-F; 9:00AM-6:30PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DREW A DUNN can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M'BAYE DIAO
Primary Examiner
Art Unit 2859

/M BAYE DIAO/
Primary Examiner, Art Unit 2859
August 7, 2020

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Notice of References Cited	Application/Control No. 16/450,422	Applicant(s)/Patent Under Reexamination Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6130519-A	10-2000	Whiting; John S.	H02J7/0034	320/105
*	B	US-20130314041-A1	11-2013	PROEBSTLE; Hartmut	F02N11/087	320/109
*	C	US-20120091944-A1	04-2012	Rogers; Chad	H02J7/0042	320/105
*	D	US-20070285049-A1	12-2007	Krieger; Michael	H01M2/1055	320/105
*	E	US-20050252573-A1	11-2005	Montani, Mark A.	B67D7/04	141/98
*	F	US-20050040788-A1	02-2005	Tseng, Wen lng	H02J7/0027	320/111
*	G	US-8172603-B1	05-2012	Richardet, Jr.; David	H01R11/24	439/504
*	H	US-6262559-B1	07-2001	Eggert; Daniel M.	H02J7/0042	320/103
*	I	US-5083076-A	01-1992	Scott; Clyde A.	H02J7/0042	320/105
*	J	US-4885524-A	12-1989	Wilburn; William M.	H01M10/44	320/105
*	K	US-20130241488-A1	09-2013	Dao; Yuan	H02J7/0022	320/111
*	L	US-20120319487-A1	12-2012	Shah; Rakesh	H02J7/0068	307/66
*	M	US-5965998-A	10-1999	Whiting; John S.	H02J7/0029	320/165

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 16/450,422	Applicant(s)/Patent Under Reexamination Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-5650974-A	07-1997	Yoshimura; Yoshimasa	G11C5/141	365/228
*	B	US-20150137740-A1	05-2015	Allos; Khalid Mike	H02J7/342	320/107
*	C	US-9041244-B2	05-2015	Graf; Alfons	B60R16/03	307/10.7
	D					
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/07/2020								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
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	37	✓								
	38	✓								

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	**Art Unit**
	M'BAYE DIAO	2859

CPC - Searched*		
Symbol	**Date**	**Examiner**
B60L53/14 H02J7/342 H02J7/0047 H02J7/0034 H02J7/0029 H02J1/122 H02J7/00 H02J7/0048 H02J2310/46	08/07/2020	MD

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**
320	105	08/07/2020	MD

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
PE2E SEARCH(Search Notes Attached).	08/07/2020	MD
PLUS Search Conducted.	07/28/2020	MD
Inventor Name and Assignee Search (SEARCH).	08/07/2020	MD
Parent Applications Noted.	08/07/2020	MD

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16450422
	Filing Date	2019-06-24
	First Named Inventor	Jonathan Lewis NOOK et al.
	Art Unit	2859
	Examiner Name	DIAO, M BAYE
	Attorney Docket Number	054985.000055-US-05

/M.D/	9	6362599	B1	2002-03-26	Turner et al.	
	10	6803743	B2	2004-10-12	George et al.	
	11	5965998		1999-10-12	Whiting et al.	
	12	4885524		1989-12-05	Wilburn	
	13	5083076		1992-01-21	Scott	
	14	6130519		2000-10-10	Whiting et al.	
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	Attorney Docket Number	054985.000055-US-05

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	36	6648701	B2	2003-11-18	MOUISSIE; BOB	
	37	7749031	B2	2010-07-06	DETTER; GARY C	
	38	8076900	B1	2011-12-13	BROWN AUDLEY	
	39	6386907	A	2002-05-14	RUFFA	
	40	6426606	B1	2002-07-30	PURKEY	
	41	9506446	b2	2016-11-29	XINFANG	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	4	20100301800	A1	2010-12-02	INSKEEP	
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	12	20110068734	A1	2011-03-24	WALDRON; JOHN F.	
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/M.D/	14	20150306964	A1	2015-10-29	WANG	
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	21	20190308518	A1	2019-10-10	NOOK et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2010/129723	WO	A2	2010-11-11	ENERGY SAFE TECHNOLOGIES		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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First Named Inventor	Jonathan Lewis NOOK et al.
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Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

/M.D/	2	2013/137873	WO	A1	2013-09-19	DAO		☒
	3	2004/036714	WO	A1	2004-04-29	VECTOR PRODUCTS, INC.		☐
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5

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EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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Application Number	16450422
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First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

/M.D/	1	PROJECTA; "2x22 Amp Hour High Performance Jumpstarter"; 2013; pages 1-20

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Bibliographic Data

Application No: 16/450,422

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /M BAYE DIAO/ Examiner's Signature | Initials

Title: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
06/24/2019	320	2859	054985-000055-US-05
RULE			

APPLICANTS

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INVENTORS

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William Knight Nook, Shaker Heights, OH, UNITED STATES

James Richard Stanfield, Peoria, AZ, UNITED STATES

Derek Michael Underhill, Tempe, AZ, UNITED STATES

CONTINUING DATA

This application is a CON of 15921792 03/15/2018 PAT 10328808

15921792 is a CON of 15691884 08/31/2017 PAT 10604024

15691884 is a CON of 14619655 02/11/2015 PAT 9770992

14619655 is a DIV of 14325938 07/08/2014 PAT 9007015

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FOREIGN APPLICATIONS

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Petitioner ADC (IPR2024-00577)

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	M'baye Diao
Attorney Docket Number	054985.000055-US04

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	13	5083076		1992-01-21	Scott	
	14	6130519		2000-10-10	Whiting et al.	
	15	6262559		2001-07-17	Eggert et al.	
	16	5111130		1992-05-05	Bates	
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/M.D/	20	5793185		1998-08-11	PRELEC et al.	
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	25	6262492		2001-07-17	SHENG	
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	36	6648701	B2	2003-11-18	MOUISSIE; BOB	
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	3	295 07 501	DE	U1	1995-06-29	SEO SOLAR SONNENENERGIE OPPACH		☐
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Attorney Docket Number	054985.000055-US04

/M.D/	6	2013-137873	WO	A1	2013-09-19	Dao		☐
	7	2010-129723	WO	A2	2010-11-11	ENER-GY SAFE TECHNOLOGIES, INC.		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:42 PM
L2	24862	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:43 PM
L3	166340	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:43 PM
L4	0	vehicle adj batter$3 adj isolat$3 adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:44 PM
L5	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:47 PM
L6	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:48 PM
L7	0	reverse adj popularity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:49 PM
L8	186	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:49 PM
L9	0	(microcontroller microcomputer microprocessor processor controller) and L1 and L2 and L3 and L6 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L10	2960317	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L11	0	L1 and L2 and L3 and L6 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L12	0	L1 and L2 and L3 and L6	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L13	0	L1 and L2 and L3 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L14	15	L1 and L2 and L3 and L10	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L15	3	L6 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:52 PM

L16	195	320/105.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:55 PM
L17	1845	320/110-112.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:55 PM
L18	0	(L16 L17) and (L14 L15)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:56 PM
L19	22	("5635817"|"8493021"|"7872361"|"20040130298"|"20100301800"|"5921809"|"6140796"|"6632103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:57 PM
L20	0	((integrated combo) adj jumper) with ((plug connector) same (other another) adj end$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:48 PM
L21	0	((integrated combo combination assembly) adj jumper) with ((plug connector) same (other another) adj end$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:48 PM
L22	0	((integrated combo combination assembly) adj jumper) and ((plug connector) same (other another) adj end$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L23	222	((integrated combo combination assembly) adj jumper) and ((plug connector))	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L24	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L25	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L26	186	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L27	3	L24 and L25 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L28	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:50 PM
L29	24862	(internal adj power adj	US-PGPUB; USPAT;	OR	ON	ON	2014/10/23

		(supply source)) (internal adj PS)	EPO				03:50 PM
L30	48	L28 and L29	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:50 PM
L31	0	L23 L24 L25 L26	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:50 PM
L32	0	L23 L24 L25	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:50 PM
L33	0	L23 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L34	0	L23 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L35	1	L26 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L36	8	L24 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L37	12	L27 L35 L36	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L38	195	320/105.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L39	1845	320/110-112.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L40	1	(L38 L39) and (L37 L30)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L41	8	(L36) and (L37)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L42	8	(L36) and (L37)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L43	8	(L36) and (L30)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L44	8	L42 L43	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L45	0	L23 and L30	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 04:03 PM
L46	0	L23 and L29 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 04:04 PM
L47	0	L23 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 04:04 PM
L48	1	L30 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 04:04 PM

L49	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-5219034-$ or US-5281792-$ or US-5354215-$ or US-5367250-$ or US-5479160-$ or US-5515939-$ or US-5635804-$ or US-5635818-$).did. or (US-5687573-$ or US-5754031-$ or US-5780953-$ or US-5796255-$ or US-6036574-$ or US-6111393-$ or US-6130519-$ or US-6232728-$ or US-3590357-$ or US-3585358-$ or US-3654538-$ or US-3648146-$ or US-3783846-$ or US-4246559-$ or US-4251847-$ or US-4272142-$ or US-4274690-$ or US-4305004-$ or US-4309675-$ or US-4321542-$ or US-4323830-$ or US-4327420-$ or US-4327519-$ or US-4346335-$ or US-4346893-$ or US-4349774-$ or US-4359893-$).did. or (US-4366430-$ or US-4379989-$ or US-4380718-$ or US-4383213-$ or US-4388618-$ or US-4420212-$ or US-4435660-$ or US-4449089-$ or US-	USPAT	OR	ON	ON	2014/10/23 05:39 PM

		4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US- 4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US- 4831321-$ or US- 4840583-$ or US- 4859987-$ or US- 4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5277285-$).did. or (US- 5287085-$ or US- 5306990-$ or US- 5343128-$ or US- 5343135-$ or US- 5357186-$ or US- 5430334-$ or US- 5498933-$ or US- 5502368-$ or US- 5522582-$ or US- 5546264-$ or US- 5548462-$ or US- 5555864-$ or US- 5560442-$ or US- 5565760-$ or US- 5571999-$ or US-					

		5593797-$ or US-5604653-$ or US-5626504-$ or US-5631544-$ or US-5635817-$ or US-5650242-$ or US-5652471-$ or US-5656922-$ or US-5691892-$ or US-5693995-$ or US-5701038-$ or US-5710471-$).did. or (US-5712549-$ or US-5712568-$ or US-5731669-$ or US-5747909-$ or US-5753989-$ or US-5767660-$ or US-5772468-$ or US-5777455-$ or US-5790037-$ or US-5795182-$ or US-5820407-$ or US-5847911-$ or US-5868076-$ or US-5892342-$ or US-5913911-$ or US-5921809-$).did.					
L50	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM
L51	24862	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM
L52	48	L50 and L51	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM
L53	1	L52 and L49	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM
L54	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:17 PM
L55	0	L54 with ((integrated embedded) adj plug)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:21 PM
L56	0	L54 and ((integrated embedded) adj plug)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:21 PM
L57	0	L54 and ((integrated embedded) adj (plug connect$3 socket$2))	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:23 PM
L58	83	L54 and (plug connect$3 socket$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:28 PM
L59	36	L54 and (plug)	US-PGPUB; USPAT;	OR	ON	ON	2014/10/23

			EPO				11:28 PM
L60	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L61	24862	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L62	48	L60 and L61	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L63	0	L59 and L62	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L64	225	(reverse reversed) adj polarity adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:19 PM
L65	0	(vehicle automobile car locomotive motorbike motorcycle) adj battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:21 PM
L66	95	battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:21 PM
L67	2960317	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:22 PM
L68	0	L64 and L66 and L67	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:22 PM
L69	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:22 PM
L70	0	L64 and L66 and L69	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:22 PM
L71	0	L64 and L66	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:23 PM
L72	10	(US-20130314041-$ or US-20120091944-$ or US-20070285049-$ or US-20050252573-$ or US-20050040788-$).did. or (US-6130519-$ or US-8172603-$ or US-6262559-$ or US-5083076-$ or US-4885524-$).did.	US-PGPUB; USPAT	OR	ON	ON	2014/10/24 11:49 PM
L73	22	("5635817"|"8493021"|"7872361"|"20040130298"|	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:50 PM

		"20100301800"|"5921809"|"6140796"|"6632103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.				
L74	0	L72 and L73	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:50 PM
L75	4	("20050110467"|"6362599"|"6803743"|"7148580").PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/11/12 05:02 PM
L76	2	WO-2013137873-$.did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2014/12/03 12:05 PM
L77	134	advantages near4 (lithium-ion) adj batter$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:03 PM
L78	196	320/105.ccls. and (@ad<="20140703")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L79	0	L77 and L78	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L80	3573	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L81	25112	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L82	167713	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L83	2991441	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L84	15	L80 and L81 and L82 and L83	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L85	0	L77 and L84	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L86	188	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L87	0	L77 and L86	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM

L88	224	((integrated combo combination assembly) adj jumper) and ((plug connector))	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L89	0	L77 and L88	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L90	25112	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L91	0	L77 and L90	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L92	1687265	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:06 PM
L93	53	L77 and L92	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:06 PM
L94	0	L93 and L90	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:07 PM
L95	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:07 PM
L96	0	L93 and L95	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:07 PM
L97	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-5219034-$ or US-5281792-$ or US-5354215-$ or US-5367250-$ or US-5479160-$ or US-5515939-$ or US-5635804-$ or US-5635818-$).did. or (US-5687573-$ or US-5754031-$ or US-5780953-$ or US-	USPAT	OR	ON	ON	2014/12/03 01:08 PM

		5796255-$ or US- 6036574-$ or US- 6111393-$ or US- 6130519-$ or US- 6232728-$ or US- 3590357-$ or US- 3585358-$ or US- 3654538-$ or US- 3648146-$ or US- 3783846-$ or US- 4246559-$ or US- 4251847-$ or US- 4272142-$ or US- 4274690-$ or US- 4305004-$ or US- 4309675-$ or US- 4321542-$ or US- 4323830-$ or US- 4327420-$ or US- 4327519-$ or US- 4346335-$ or US- 4346893-$ or US- 4349774-$ or US- 4359893-$).did. or (US- 4366430-$ or US- 4379989-$ or US- 4380718-$ or US- 4383213-$ or US- 4388618-$ or US- 4420212-$ or US- 4435660-$ or US- 4449089-$ or US- 4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US- 4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US- 4831321-$ or US- 4840583-$ or US- 4859987-$ or US-				

		4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5277285-$).did. or (US- 5287085-$ or US- 5306990-$ or US- 5343128-$ or US- 5343135-$ or US- 5357186-$ or US- 5430334-$ or US- 5498933-$ or US- 5502368-$ or US- 5522582-$ or US- 5546264-$ or US- 5548462-$ or US- 5555864-$ or US- 5560442-$ or US- 5565760-$ or US- 5571999-$ or US- 5593797-$ or US- 5604653-$ or US- 5626504-$ or US- 5631544-$ or US- 5635817-$ or US- 5650242-$ or US- 5652471-$ or US- 5656922-$ or US- 5691892-$ or US- 5693995-$ or US- 5701038-$ or US- 5710471-$).did. or (US- 5712549-$ or US- 5712568-$ or US- 5731669-$ or US- 5747909-$ or US- 5753989-$ or US- 5767660-$ or US- 5772468-$ or US- 5777455-$ or US- 5790037-$ or US- 5795182-$ or US- 5820407-$ or US- 5847911-$ or US- 5868076-$ or US- 5892342-$ or US- 5913911-$ or US- 5921809-$).did.					

L98	0	L93 and L97	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:08 PM
L99	1856	320/110-112.ccls. and (@ad<="20140703")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:08 PM
L100	0	L93 and L99	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:08 PM
L101	1	"20130241488"	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:39 PM
L102	1	"20050110467"	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 11:35 AM
L103	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:06 PM
L104	3612	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L105	25490	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L106	169705	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L107	17	L104 and L105 and L106	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L108	4	L103 and L105 and L106	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:08 PM
L110	1	"6130519".pn.	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:32 PM
L121	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L122	25490	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L123	169705	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L124	4	L121 and L122 and L123	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L125	4	L124 and (@ad<="20140703")	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L126	1	"9007015".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/23 12:22 PM

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

L127	2	"9506446".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/23 08:53 PM
L128	2	"20040130298"	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/23 09:12 PM
L129	1	"20050110467"	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 03:49 PM
L130	154	("5793185" "5752754" "4562893" "4793175" "4972135" "5886501" "5936317" "4521204" "4540376" "4554221" "4565538" "4573943" "4759728" "4798975" "4878877" "4889516" "4969834" "5179494" "5219034" "5281792" "5354215" "5367250" "5479160" "5515939" "5635804" "5635818" "5687573" "5754031" "5780953" "5796255" "6036574" "6111393" "6130519" "6232728" "3590357" "3585358" "3654538" "3648146" "3783846" "4246559" "4251847" "4272142" "4274690" "4305004" "4309675" "4321542" "4323830" "4327420" "4327519" "4346335" "4346893" "4349774" "4359893" "4366430" "4379989" "4380718" "4383213" "4388618" "4420212" "4435660" "4449089" "4459536" "4461958" "4463402" "4479083" "4482830" "4488147" "4491110" "4497306" "4503378" "4508516" "4511831" "4511825" "4516648" "4537174" "4550280" "4575670" "4584513" "4615958" "4616166" "4631455" "4760000" "4764852" "4769586" "4799135" "4820966" "4829223" "4831321" "4840583" "4859987" "4868409" "4871957" "4871959" "4884464" "4885524" "4892204" "4913981" "4923415" "4924176" "4975089" "5012689" RE34159 "5241242" "5245258"	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM

		H001236 "5253138" "5277285" "5287085" "5306990" "5343128" "5343135" "5357186" "5430334" "5498933" "5502368" "5522582" "5546264" "5548462" "5555864" "5560442" "5565760" "5571999" "5593797" "5604653" "5626504" "5631544" "5635817" "5650242" "5652471" "5656922" "5691892" "5693995" "5701038" "5710471" "5712549" "5712568" "5731669" "5747909" "5753989" "5767660" "5772468" "5777455" "5790037" "5795182" "5820407" "5847911" "5868076" "5892342" "5913911" "5921809").pn.					
L131	4480	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L132	35042	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L133	62	L131 and L132	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L134	1	L130 AND L133	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L135	73	((batter$3 adj presence)) adj (sens$3 detect$4)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:16 PM
L136	259	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:16 PM
L137	0	L135 and L136	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:16 PM
L138	35	(positive negative) near vehicle near connect$2	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:18 PM
L139	73	((batter$3 adj presence)) adj (sens$3 detect$4)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:13 PM
L140	35	(positive negative) near vehicle near connect$2	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:13 PM
L141	0	L139 and L140	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:13 PM
L142	302	((integrated combo	US-PGPUB; USPAT;	OR	ON	ON	2019/01/05

		combination assembly) adj jumper) and ((plug connector))	EPO				09:24 PM
L143	0	L139 and L142	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:24 PM
L144	37280	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:25 PM
L145	7	L139 and L144	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:25 PM
L146	4703	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L147	37280	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L148	67	L146 and L147	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L149	0	L145 and L148	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L150	130	battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:29 PM
L151	7	L145 and L150	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:29 PM
L152	2	"20040130298"	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 11:34 PM
L153	14677	(B60L53/14 or H02J7/0047 or H02J7/0054 or H02J7/0029 or H02J7/0034 or H02J2007/0062 or H02J2007/005 or H02J2001/006).cpc.	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/07/25 02:58 PM
L157	1	"9007015".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 11:00 AM
L158	1	"9770992".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 12:07 PM
L159	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-	USPAT	OR	ON	ON	2019/10/07 01:22 PM

		4413234-$ or US- 4546265-$ or US- 5193212-$ or US- 5194799-$ or US- 5245304-$ or US- 5309031-$ or US- 5685630-$ or US- 5778026-$ or US- 5789099-$ or US- 5811913-$ or US- 5850134-$ or US- 4270834-$ or US- 4270827-$ or US- 4274043-$ or US- 4303962-$ or US- 4305550-$ or US- 4314193-$ or US- 4320333-$).did. or (US- 4354725-$ or US- 4374347-$ or US- 4373763-$ or US- 4373762-$ or US- 4377317-$ or US- 4384240-$ or US- 4409538-$ or US- 4467263-$ or US- 4470654-$ or US- 4496204-$ or US- 4516066-$ or US- 4527223-$ or US- 4552542-$ or US- 4555656-$ or US- 4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US- 5539610-$ or US-					

		5587916-$ or US- 5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US- 5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US- 6091906-$ or US- 6131065-$ or US- 6174618-$ or US- 4245308-$ or US- 4246635-$ or US- 4246544-$ or US- 4247813-$ or US- 4247753-$ or US- 4258292-$ or US- 4259631-$ or US- 4262278-$ or US- 4271092-$ or US- 4275385-$).did. or (US- 4276236-$ or US- 4281368-$ or US- 4290060-$ or US- 4292840-$ or US- 4307437-$ or US- 4306374-$ or US- 4314194-$ or US- 4316097-$ or US- 4321523-$ or US- 4321646-$ or US- 4322484-$ or US- 4323837-$ or US- 4326161-$ or US- 4330686-$ or US- 4332003-$ or US- 4335375-$ or US- 4335481-$ or US- 4339677-$ or US- 4345154-$ or US- 4355263-$ or US- 4355422-$ or US- 4356442-$ or US- 4360789-$ or US-				

		4361730-$ or US-4368507-$ or US-4382221-$ or US-4392185-$).did. or (US-4395774-$ or US-4399201-$ or US-4401856-$ or US-4410835-$ or US-4414298-$ or US-4413364-$ or US-4415272-$ or US-4415843-$ or US-4417240-$ or US-4416550-$ or US-4424854-$ or US-4430396-$ or US-4432938-$ or US-4435742-$ or US-4435486-$ or US-4445358-$).did.					
L160	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-4413234-$ or US-4546265-$ or US-5193212-$ or US-5194799-$ or US-5245304-$ or US-5309031-$ or US-5685630-$ or US-5778026-$ or US-5789099-$ or US-5811913-$ or US-5850134-$ or US-4270834-$ or US-4270827-$ or US-4274043-$ or US-4303962-$ or US-4305550-$ or US-4314193-$ or US-4320333-$).did. or (US-4354725-$ or US-4374347-$ or US-4373763-$ or US-4373762-$ or US-4377317-$ or US-4384240-$ or US-4409538-$ or US-4467263-$ or US-4470654-$ or US-4496204-$ or US-4516066-$ or US-4527223-$ or US-4552542-$ or US-4555656-$ or US-	USPAT	OR	ON	ON	2019/10/07 01:22 PM

		4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US- 5539610-$ or US- 5587916-$ or US- 5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US- 5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US- 6091906-$ or US- 6131065-$ or US- 6174618-$ or US- 4245308-$ or US- 4246635-$ or US- 4246544-$ or US- 4247813-$ or US-				

		4247753-$ or US-4258292-$ or US-4259631-$ or US-4262278-$ or US-4271092-$ or US-4275385-$).did. or (US-4276236-$ or US-4281368-$ or US-4290060-$ or US-4292840-$ or US-4307437-$ or US-4306374-$ or US-4314194-$ or US-4316097-$ or US-4321523-$ or US-4321646-$ or US-4322484-$ or US-4323837-$ or US-4326161-$ or US-4330686-$ or US-4332003-$ or US-4335375-$ or US-4335481-$ or US-4339677-$ or US-4345154-$ or US-4355263-$ or US-4355422-$ or US-4356442-$ or US-4360789-$ or US-4361730-$ or US-4368507-$ or US-4382221-$ or US-4392185-$).did. or (US-4395774-$ or US-4399201-$ or US-4401856-$ or US-4410835-$ or US-4414298-$ or US-4413364-$ or US-4415272-$ or US-4415843-$ or US-4417240-$ or US-4416550-$ or US-4424854-$ or US-4430396-$ or US-4432938-$ or US-4435742-$ or US-4435486-$ or US-4445358-$).did.					
L161	4959	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:28 PM
L162	39692	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:28 PM
L163	70	L161 and L162	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:28 PM
L164	13669	320/105.ccls.	US-PGPUB; USPAT;	OR	ON	ON	2019/10/07

		(H02J7/0054 or H02J7/0034 or H02J7/0029 or H02J7/0047 or H02J2001/006 or H02J2007/005 or H02J2007/0062 or H02J7/0063 or H02J1/06 or H02J2007/004 or H02J2007/0037).cpc.	EPO				01:31 PM
L165	331	(reverse reversed) adj polarity adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:32 PM
L166	135	battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:32 PM
L167	0	L165 and L166	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:32 PM
L168	0	L163 and (L165 L166) and L160	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:34 PM
L169	10	L163 and (L165 L166) and L164	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:34 PM
L170	4639064	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:35 PM
L171	10	L169 and L170	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:35 PM
L172	38	((("THE") near3 ("NOCO") near3 ("COMPANY"))).AS,AANM.	USPAT	OR	ON	ON	2019/10/07 01:48 PM
L173	87	((("NOOK") near3 ("Jonathan")) OR (("NOOK") near3 ("William")) OR (("STANFIELD") near3 ("James")) OR (("UNDERHILL") near3 ("Derek"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	ON	2019/10/07 01:48 PM
L174	64	("20020041174"|"20040066168"|"20040130298"|"20050040788"|"20050110467"|"20050252573"|"20070285049"|"20100301800"|"20110068734"|"20120091944"|"20130154543"|"20130314041"|"20140159509"|"20150306964"|"20160001666"|"3933	US-PGPUB; USPAT	OR	ON	ON	2020/03/02 07:34 PM

		140"|"4041445"|"4885524"|"4910628"|"4931731"|"5083076"|"5111130"|"5189359"|"5486434"|"5635817"|"5635818"|"5793185"|"5795182"|"5921809"|"5965998"|"6054779"|"6130519"|"6140796"|"6147471"|"6212054"|"6262492"|"6262559"|"6362599"|"6386907"|"6426606"|"6632103"|"6648701"|"6756764"|"6803743"|"6822425"|"7148580"|"7301303"|"7749031"|"7872361"|"8076900"|"8172603"|"8199024"|"8376775"|"8493021"|"9506446"|"9770992"|"D625265"|"D649116"|"D689020"|"D726109"|"D726114"|"D726121"|"D735665"|"D746774").PN.				
L175	474	reverse near (polarity voltage) near detect$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:29 PM
L176	20	battery near isolat$3 near (sensor detector)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:29 PM
L177	0	L175 and L176	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:31 PM
L178	8	(L175 L176) and L174	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:32 PM
L179	2	("20180345803").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/03/03 02:58 PM
L180	13	("10328808"|"10604024"|"20050110467"|"20070278990"|"20180111491"|"20180215274"|"20180269703"|"20180342891"|"20180345803"|"20190308518"|"5953681"|"9007015"|"9770992").PN.	US-PGPUB; USPAT	OR	ON	ON	2020/07/13 10:55 PM
L181	1	"9007015".PN.	US-PGPUB; USPAT	OR	ON	ON	2020/07/14 01:25 PM
L182	3	"20130154543"	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 01:04 PM
L183	3	"9954391".pn.	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:39 PM
L184	240	output near port same (receptacle same plug)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:42 PM
L185	5219	jump adj start$3	US-PGPUB; USPAT;	OR	ON	ON	2020/07/16

			EPO				02:43 PM
L186	0	L184 and L185	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:43 PM
L187	42234	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L188	248140	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L189	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L190	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L191	11	L187 and L188 and L189 and L190 and L185	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L192	240	(output near port) same (receptacle same plug)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:45 PM
L193	1949	(output near port) and (receptacle same plug)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:45 PM
L194	0	L191 and (L192 L193)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:45 PM
L195	5219	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L196	42234	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L197	248140	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L198	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L199	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L200	11	L196 and L197 and L198 and L199 and L195	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L201	2	"20040130298"	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:35 PM
L202	2	("20180264959").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 11:46 PM
L203	1	"20090174362"	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 07:14 PM
L204	25362	(B60L53/14 or	US-PGPUB; USPAT;	OR	ON	ON	2020/08/07

		H02J7/342 or H02J7/0047 or H02J7/0034 or H02J7/0029 or H02J1/122 or H02J7/00 or H02J7/0048 or H02J2310/46).cpc. 320/105.ccls.	EPO				08:21 PM
L205	5229	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L206	42408	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L207	249036	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L208	2450598	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L209	10231	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L210	295	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L211	11	L204 and L205 and L206 and L207 and (L208 L209) and L210	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L212	149	(US-6014030-$ or US-4306374-$ or US-4559478-$ or US-4771451-$ or US-5378549-$ or US-5745587-$ or US-6229381-$ or US-6232752-$ or US-4297531-$ or US-4356442-$ or US-4370526-$ or US-4386818-$ or US-4426678-$ or US-4459536-$ or US-4855662-$ or US-4872199-$ or US-4927722-$ or US-4935959-$ or US-4994727-$ or US-5349285-$ or US-5367250-$ or US-5371455-$ or US-5376476-$ or US-5408223-$ or US-5410237-$ or US-5425004-$).did. or (US-5560442-$ or US-5571999-$ or US-	USPAT	OR	ON	ON	2020/08/07 08:24 PM

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

		5739711-$ or US- 6016044-$ or US- 6042961-$ or US- 6147471-$ or US- 6211642-$ or US- 3783846-$ or US- 4253056-$ or US- 4262353-$ or US- 4272142-$ or US- 4291106-$ or US- 4301407-$ or US- 4314009-$ or US- 4315973-$ or US- 4321542-$ or US- 4322143-$ or US- 4333721-$ or US- 4343982-$ or US- 4346893-$ or US- 4349774-$ or US- 4361795-$ or US- 4379267-$ or US- 4380718-$ or US- 4397184-$ or US- 4399499-$ or US- 4399818-$).did. or (US- 4409304-$ or US- 4413248-$ or US- 4413220-$ or US- 4424264-$ or US- 4424812-$ or US- 4431868-$ or US- 4463402-$ or US- 4473756-$ or US- 4474537-$ or US- 4479083-$ or US- 4480018-$ or US- 4484145-$ or US- 4485271-$ or US- 4488147-$ or US- 4488110-$ or US- 4489341-$ or US- 4502211-$ or US- 4504556-$ or US- 4507856-$ or US- 4525438-$ or US- 4527111-$ or US- 4528255-$ or US- 4528424-$ or US- 4537174-$ or US- 4550280-$ or US- 4551670-$ or US- 4562128-$).did. or (US- 4564728-$ or US- 4579790-$ or US- 4581549-$ or US- 4588860-$ or US- 4592087-$ or US- 4592360-$ or US- 4602850-$ or US- 4625174-$ or US- 4631455-$ or US-					

		4757250-$ or US- 4770613-$ or US- 4774952-$ or US- 4774993-$ or US- 4782242-$ or US- 4798975-$ or US- 4803472-$ or US- 4809322-$ or US- 4818340-$ or US- 4819116-$ or US- 4841203-$ or US- 4871959-$ or US- 4892204-$ or US- 4903318-$ or US- 4907261-$ or US- 4923415-$ or US- 4974588-$ or US- 4990836-$).did. or (US- 4998141-$ or US- 5006427-$ or US- 5007436-$ or US- 5010307-$ or US- 5020517-$ or US- 5023493-$ or US- 5189359-$ or US- 5191507-$ or US- 5193107-$ or US- 5197085-$ or US- 5198702-$ or US- 5224476-$ or US- 5229220-$ or US- 5230637-$ or US- 5230967-$ or US- 5240655-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5254081-$ or US- 5280459-$ or US- 5281491-$ or US- 5296314-$ or US- 5319300-$ or US- 5325835-$ or US- 5329588-$ or US- 5344725-$).did. or (US- 5347440-$ or US- 5370665-$ or US- 5384211-$ or US- 5385512-$ or US- 5404859-$ or US- 5419745-$ or US- 5425348-$ or US- 5453643-$ or US- 5453715-$ or US- 5463380-$ or US- 5481185-$ or US- 5498984-$ or US- 5508122-$ or US- 5534368-$ or US- 5539820-$).did.				

L213	0	L205 L206 (L208 or L209) L210 L212	US-PGPUB; USPAT; EPO	AND	ON	ON	2020/08/07 08:24 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N111	0	(jump and vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:50 PM
N112	0	(vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:50 PM
N113	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:50 PM
N114	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:51 PM
N115	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:51 PM
N116	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:52 PM

		microcontrol$3 and input and signal$2).clm.					
N117	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:52 PM
N118	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:52 PM
N119	0	(power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:53 PM
N120	0	(power and supply and output$2 and isolation and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:53 PM
N154	4	(supply and output$2 and isolat$3 and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2019/07/25 05:23 PM
N155	4	(supply and output$4 and isolat$3 and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2019/07/25 05:23 PM
N156	4	N154 and N155	US-PGPUB; USPAT	OR	OFF	OFF	2019/07/25 05:24 PM

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
/M.D/	1	2018-536789	JP	A	2018-12-13	THE NOCO COMPANY		☒
	2	108884801	CN	A	2018-11-23	THE NOCO COMPANY		☒
	3	3407405	EP	A1	2018-11-28	THE NOCO COMPANY		☐

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.D/

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

/M.D/	4	2527858	GB	A	2016-01-06	THE NOCO COMPANY		☐
	5	2010/129723	WO	A2	2010-11-11	ENERGY SAFE TECHNOLOGIES, INC.		☐
	6	2017/138963	WO	A1	2017-08-17	THE NOCO COMPANY		☐
	7	20 2013 102 599	DE	U1	2013-08-13	ASIA BRIGHT INDUSTRIAL HONG KONG CO		☒
	8	295 07 501	DE	US	1995-06-29	SEO SOLAR SONNENENERGIE OPPACH		☒
	9	20 2009 016 260	DE	U1	2010-03-25	TSAI MING WEI		☒
	10	10 2014 114 997	DE	A1	2016-01-07	THE NOCO COMPANY		☒
	11	2015258229	AU	A1	2016-01-28	THE NOCO COMPANY		☐
	12	2557733	GB	A	2018-06-27	THE NOCO COMPANY		☐
	13	2016392707	AU	A1	2017-11-30	THE NOCO COMPANY		☐
	14	11 2016 002 206	DE	T5	2018-03-15	THE NOCO COMPANY		☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

/M.D/	15	2 957 431	CA	A1	2017-08-11	THE NOCO COMPANY		☐
	16	2016269555	AU	B2	2017-01-05	THE NOCO COMPANY		☐
	17	2019201559	AU	A1	2019-03-28	THE NOCO COMPANY		☐
	18	3 005 971	CA	A1	2017-08-17	THE NOCO COMPANY		☐
	19	2562950	GB	A	2018-11-28	THE NOCO COMPANY		☐
	20	2019201081	AU	A1	2019-03-07	THE NOCO COMPANY		☐
	21	2017217661	AU	B2	2018-11-15	THE NOCO COMPANY		☐
	22	2019201559	AU	A1	2019-03-28	THE NOCO COMPANY		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	Jonathan Lewis NOOK et al.
Art Unit	2859
Examiner Name	DIAO, M BAYE
Attorney Docket Number	054985.000055-US-05

EXAMINER SIGNATURE

Examiner Signature	/M BAYE DIAO/	Date Considered	08/07/2020

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.D./

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

20230 7590 08/13/2020

Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
WASHINGTON, DC 20006-1152

EXAMINER	
DIAO, M BAYE	

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
08/13/2020	ELECTRONIC

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The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patlaw@vorys.com

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR/ PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
16/450,422	06/24/2019	Nook et al.	054985-000055-US-

	EXAMINER	
Vorys, Sater, Seymour and Pease LLP **1909 K St., NW 9th Floor** **WASHINGTON, DC 20006-1152**	M'BAYE DIAO	
	ART UNIT	**PAPER**
	2859	20200810

DATE MAILED: 10 August 2020

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Commissioner for Patents

Inter Partes Review for USPAT 9,007,015 search recordation notes were inadvertently omitted in the previous search notes and are attached herewith.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	08/10/2020

PTO-90C (Rev.04-03)

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

CPC - Searched*		
Symbol	Date	Examiner
B60L53/14 H02J7/342 H02J7/0047 H02J7/0034 H02J7/0029 H02J1/122 H02J7/00 H02J7/0048 H02J2310/46	08/07/2020	MD

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
320	105	08/07/2020	MD

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PE2E SEARCH(Search Notes Attached).	08/07/2020	MD
PLUS Search Conducted.	07/28/2020	MD
Inventor Name and Assignee Search (SEARCH).	08/07/2020	MD
Parent Applications Noted.	08/07/2020	MD
IPR2018-00503 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-00944 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-01387 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/450,422	Filing Date 06/24/2019	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	01/12/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 46	Minus	** 33	= 13		x $100 =	1300
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	1300

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/VICTORIA JOHNSON/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

VORYS

Vorys, Sater, Seymour and Pease LLP
Legal Counsel

1909 K Street NW
Suite 900
Washington, DC 20006-1152

202.467.8800 | www.vorys.com

Founded 1909

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint: Practitioner(s) associated with the Customer Number: **20230**

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

The address associated with the above-mentioned Customer Number: **20230**

Applicant Name and Address:

THE NOCO COMPANY
30339 Diamond Parkway, #102,
Glenwillow, Ohio 44139,
United States of America

Signature of Applicant of Record
The individual whose signature and title is supplied below is authorized to act on behalf of the Applicant

Signature _____ Date 8/7/13

Name Jonathan Rock Telephone (216) 464-8131

Title President

PTO/AIA/96 (08-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: THE NOCO COMPANY

Application No./Patent No.: 16 45 5 22 Filed/Issue Date: 06-24-2019

Titled: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

THE NOCO COMPANY, a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 048539, Frame 0629, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

   1. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

   2. From: _____ To: _____

      The document was recorded in the United States Patent and Trademark Office at

      Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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STATEMENT UNDER 37 CFR 3.73(c)

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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/William L. Klima/	January 12, 2021
Signature	Date
William L. Klima	32422
Printed or Typed Name	Title or Registration Number

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	41624144
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Lisa Elliott
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985-000055-US-05
Receipt Date:	12-JAN-2021
Filing Date:	24-JUN-2019
Time Stamp:	16:24:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	POA_Noco_exe.PDF	57165 9c9091f696222a876202717e89d4387f2c4b 1013	no	1

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	373c.pdf	136374 238add6a36888cf4c13e46ed92b9e49ebb82a828	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	193539	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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Electronic Patent Application Fee Transmittal

Application Number:	16450422
Filing Date:	24-Jun-2019
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Filer:	William Leonard Klima/Lisa Elliott
Attorney Docket Number:	054985-000055-US-05

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	13	50	650
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Extension - 2 months with $0 paid	2252	1	320	320
Miscellaneous:				
			Total in USD ($)	**970**

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	41624707
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Lisa Elliott
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985-000055-US-05
Receipt Date:	12-JAN-2021
Filing Date:	24-JUN-2019
Time Stamp:	16:51:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$970
RAM confirmation Number	E20211BG51435387
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Extension of Time	EOT.pdf	165054 299e1bc899c4ecd704dd53fc0ce17680d1028cc5	no	2
Warnings:					
Information:					
2	Amendment/Req. Reconsideration-After Non-Final Reject	2021_01_12_RNFOA.pdf	252103 9007e17ab1ff0788072753ee379d5c891f47307a	no	30
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32650 68187069b666da04366ba9f4fbace1650a55dbdd	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	449807		

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Petitioner ADC (IPR2024-00577)

PTO/AIA/22 (10-20)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 054985-000055-US-05

Application Number: 16450422

Filed: 06-24-2019

For: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

Art Unit: 2859

Examiner: DIAO, M BAYE

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☐ One month (37 CFR 1.17(a)(1))	$220	$110	$55	$
☑ Two months (37 CFR 1.17(a)(2))	$640	$320	$160	$ 320
☐ Three months (37 CFR 1.17(a)(3))	$1,480	$740	$370	$
☐ Four months (37 CFR 1.17(a)(4))	$2,320	$1,160	$580	$
☐ Five months (37 CFR 1.17(a)(5))	$3,160	$1,580	$790	$

☑ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.

☑ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 32422.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/William L. Klima/ — Signature

January 12, 2021 — Date

William L. Klima — Typed or printed name

2024678800 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Petitioner ADC (IPR2024-00577)

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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Petitioner ADC (IPR2024-00577)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Jonathan Lewis NOOK et al.
Appl. No.: 16/450,422
Filing Date: June 24, 2019
Exam: DIAO, M BAYE
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 August 12, 2020, along with an extension of time, making a response due on or before January 12, 2020. Accordingly, this paper is timely filed.

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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:

~~an internal~~ 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 battery presence sensor or circuit connected in a first circuit with the positive polarity battery terminal connector and the negative polarity battery terminal connector, the vehicle battery presence sensor or circuit configured to detect a presence of the depleted or discharged battery when connected between 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 battery terminal connector, the reverse polarity sensor configured to detect a polarity of the depleted or discharged battery connected between the positive polarity battery terminal connector and the~~

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~~negative polarity battery terminal connector;~~

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

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

~~wherein the power switch or circuit electrically switches the internal power supply to connect with the depleted or discharged battery only when the depleted or discharged battery is determined by the microcontroller to be present in response to the signal provided by the battery presence sensor or circuit and connected to the depleted or discharged battery with correct polarity in response to the signal provided by the reverse polarity sensor.~~

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 system or circuit configured to detect whether the positive and negative polarity battery terminal connectors have a proper 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 charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and

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

2. (Currently Amended) The apparatus of claim 1, wherein the ~~internal~~ 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. (Currently Amended) The apparatus of claim 1, wherein the ~~battery presence sensor or circuit and the reverse polarity sensor or circuit comprise optically coupled isolator phototransistors~~ 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.

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6. (Currently Amended) The apparatus of claim 1, further comprising a plurality of power diodes coupled between the positive and negative battery terminal connectors and ~~the 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. (Currently Amended) The apparatus of claim 1, further comprising a temperature sensor configured to detect temperature of the ~~internal~~ power supply and to provide a temperature signal to the microcontroller.

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

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

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

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11. (Currently Amended) The apparatus of claim 1, further comprising a USB charging input port configured to provide charging power from an external power source to the ~~internal~~ power supply, the USB charging port comprising the USB connector.

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

15. (Currently Amended) The apparatus of claim 1, further comprising a plurality of visual indicators configured to display remaining capacity status of the ~~internal~~ 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.

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

18. (Currently Amended) The apparatus of claim 1, further comprising separate visual indicators configured to display [[the]] a power on status of the jump starting apparatus, and [[the]] a jump start boost power status of power supplied to [[the]] 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 [[the]] an output port when the vehicle battery isolation sensor is unable to detect presence of a vehicle battery.

20. (Currently Amended) The apparatus of claim 19, wherein ~~said microcontroller~~ 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. (Currently Amended) The apparatus of claim 1, further comprising a jumper cable device, the ~~jump~~ 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.

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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. (Currently Amended) 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

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polarity battery terminal connector and the negative polarity terminal connector;

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

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 the power switch,

~~wherein the battery presence sensor or circuit, reverse polarity sensor or circuit, and the microcontroller are configured to switch on the internal power supply to connect with the depleted or discharged battery only when the positive polarity battery terminal connector is connected to the positive polarity battery terminal of the depleted or discharged battery and the negative polarity battery terminal connector is connected to the negative polarity battery terminal of the depleted or discharged battery.~~

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

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

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

~~wherein the power switch control system or circuit switches on the power supply to connect the power supply to the depleted or discharged battery only when power switch control system or circuit detects both that the depleted or discharged battery is present and connected between the positive and negative battery connectors and the depleted or discharged battery is connected with a correct polarity between the positive and negative battery terminals.~~

a USB charge circuit connected to the power supply, the USB charge circuit

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

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

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 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 ~~correct~~ proper polarity between the positive and negative battery terminals.

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

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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 ~~switches~~ is configured to turn on the power switch [[on]] 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 connected to the jump starting apparatus with ~~the correct~~ proper polarity.

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

~~wherein the power switch control system or circuit switches on the power supply to connect the power supply to the depleted or discharged battery only when the positive battery terminal connector is connected to the positive polarity battery connector of the depleted or discharged battery and the negative battery terminal connector is connected to the negative polarity battery connector of the depleted or discharged battery.~~

a USB charge circuit connected to the power supply, the USB charge circuit

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

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

39. (New) The apparatus according to claim 1, further comprising a DC-DC converter connected to the USB charge circuit.

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

41. (New) 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. (New) The apparatus according to claim 39, wherein the USB 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. (New) The apparatus according to claim 1, further comprising a USB output circuit connected to the power supply to provide a USB output for charging portable electronic devices from the power supply, and a USB output connector connected to the USB output circuit.

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44. (New) 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 to be turned on and off by software control to prevent the internal lithium battery from getting too low in capacity.

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

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

47. (New) 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. (New) The apparatus according to claim 1, wherein the proper connection with the positive and negative polarity battery terminals of the depleted or discharged battery prior to turning on the power switch or circuit is a proper polarity connection.

49. (New) 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.

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50. (New) 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 connected to the positive and negative polarity battery terminal connectors with proper polarity.

51. (New) 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 connected to the positive and negative polarity battery terminal connectors with proper polarity.

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Remarks

Upon entry of the above amendments, claims 1-23 and 29-42 are pending in the present application. Claims 24-28 have previously been cancelled without prejudice or disclaimer of the subject matter contained therein. Claims 1, 2, 5-11, 14, 15, 17-21, 23, 29, 30, 33, 35, 37, and 38 have been amended, and claims 39-51 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. Objection to the claims, beginning on page 2

Examiner objects to the claims, particularly claim 33 and 37.

Please find amendments to the claims filed herein.

In view of the foregoing, it is submitted that claims are no longer objectionable. Accordingly, reconsideration and withdrawal of this objection is respectfully requested.

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II. Rejection under 35 USC § 112(d) (Improper Dependency), beginning on page 4

a. Claims 33-37

The Examiner asserts that claims 33-37 are of improper dependent form.

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

Please find amendments to the claims filed herein.

In view of the foregoing, it is submitted that claims 33-37 are properly dependent within the meaning of 35 USC § 112(d). Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

III. Rejection under 35 USC § 102(a)(1)(a)(2), beginning on page 4

a. Claims 1, 7-9, 15, 17-20, 23, 29-38 anticipated by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387).

The Examiner asserts that ***Richardson*** teach each and every element of each of claims 1, 7-9, 15, 17-20, 23, 29-38.

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

In the present case, ***Richardson*** fails to teach each and every element of the presently claimed subject matter as required for anticipation under 35 USC § 102(a)(1)(a)(2).

In particular, ***Richardson*** does not teach a jump starting apparatus, including a USB charge circuit and USB connector let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB connector to the USB

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charge circuit", as required by present claims 1, 7-9, 15, 17-20, 23, 29-38.

In view of the forgoing, Applicants submit that ***Richardson*** does not teach each and every element of the subject matter described in claims 1, 7-9, 15, 17-20, 23, 29-38, as required for anticipation under 35 USC § 102(a)(1)(a)(2). Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

IV. Rejection under 35 USC § 103, beginning on page 17

a. Claims 2-3, 10-14, and 21, 23 are 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).

The Examiner states 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 by having the internal power supply comprises a lithium-ion battery into the jump apparatus of Richardson. The advantages for doing so is that lithium ion batteries present numerous advantages such as high energy density, excellent cycle characteristics, safety under various operating environments, and long-term reliability." Further, "[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 combined known USB output port configured to provide charging power from the internal power supply to a USB-chargeable device with the battery jump starter of Richardson, as recited, to allow the device to offer a standardized charging interface for charging other electronic devices without requiring specialized plugs…. [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

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users of using another commonly used power input for charging the jump starter device… it would have been obvious to a person of ordinary skill that a user may need to use the portable jump starter in situations where there is not sufficient light. Furthermore, it would have been obvious to combine the LED flashlight of Xinfang with Richardson as it provides a portable battery jump starter the ability to better observe connectors in the vehicle and LED flashlights and thereby minimize possible wrong and reverse polarity connection of the cables in an absence of sun light or in period of darkness… it would have been obvious to one of ordinary skill in the art to combine the teachings of Xinfang with those of Richardson to include a LED flashlight and configure it to provide a visual alarm indicating an emergency situation so as to warn the user in an emergency situation… it would have been obvious to one of ordinary skill in the art to combine Xinfang's jumper cables with Richardson's jump starter apparatus to provide a connection to the vehicle battery, in particular because jumper cable devices were widely known long before the effective filing date of the claimed invention since the technology and performance of jumper cables was well known and the combination would have yielded predictable results."

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.

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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)**.

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

Xinfang discloses a charging port 34, which is connectable to an external charging circuit adapter 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 52-58).

Clearly, the charging port 34 of ***Xinfang*** is not a USB connector, but instead is a conventional cylindrical-shaped (e.g. barrel type) electrical connector. Further, the charging circuit is located in an external adapter located outside and separate from the mobile power bank, and is not part of the mobile power bank unlike the claimed subject matter.

In view of the foregoing, it is submitted that nothing in ***Richardson*** and ***Xinfang***, 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.

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V. Rejection under 35 USC § 103, beginning at page 22

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 in further view of Richardet Jr. USPAT 8,172,603 (Exhibit 1014 IPR2020-00944).

The Examiner asserts that "it would have been obvious to one having 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 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.

Appropriate legal precedent is discussed above and is incorporated herein in its entirety by reference.

Richardson and ***Xinfang*** have been discussed above, which discussions are incorporated herein in their entirety. As discussed above, ***Richardson*** and ***Xinfang***, taken alone or together, fail to teach or suggest all of the limitations of the claims as required by *In re Vaeck*, because none of the foregoing references, taken alone or together, teach or suggest a jump starting apparatus, including a USB charge circuit and USB connector let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB connector to the USB charge circuit."

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Richardet Jr. does not cure the deficiencies of ***Richardson*** and ***Xinfang***, because ***Richardet Jr.*** also does not teach or suggest a jump starting apparatus, including a USB charge circuit and a USB charger let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for providing charge input from the USB charger to the USB charge circuit."

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang***, 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.

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

b. Claim 16 is unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Baxter (Exhibit 1011 IPR2020-00944)(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 incorporate LEDs providing output light of different colors of Baxter in the Richardson's apparatus 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.

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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)**.

Richardson and Baxter both do not teach or suggest a jump starting apparatus, including a USB charge circuit and USB connector let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB connector to the USB charge circuit."

In view of the foregoing, it is submitted that nothing in ***Richardson*** 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.

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

c. Claims 10-11 are unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Epower-20 Brochure (IPR 2020-00944 Exhibit 1012).

The Examiner states 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 a USB output port configured to provide charging power from the internal power supply to a USB-chargeable device into the apparatus of Richardson so as to provide additional convenience to users to provide charging power for their mobile phones and other devices." Further, "[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 USB charging port providing charging power from an external power source to the internal power supply 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."

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)**.

Richardson is discussed in detail above, which discussion is incorporated herein.

Epower-20 Brochure does not disclose a jump starting apparatus, including a USB charge circuit and USB connector.

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Instead, ***Epower-20 Brochure*** discloses two (2) standard accessories, including a home charger, including an AC adapter (as shown), and a car charger, including a cigarette lighter connector with DC adapter (as shown).

Both the home charger and car charger of ***Epower-20 Brochure*** use a conventional cylindrical-shaped connector (e.g. barrel connector) for electrically connecting to the fast car charger instead of a USB connector. Further, the ***Epower-20 Brochure*** does not disclose the fast car charger having a USB charge circuit.

Thus, both ***Richardson and Epower-20 Brochure*** do not disclose a jump starting apparatus, including a USB charge circuit and USB connector, let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB connector to the USB charge circuit."

In view of the foregoing, it is submitted that nothing in ***Richardson*** and ***Epower-20 Brochure***, 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.

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VIII. Rejection under 35 USC § 103, beginning on page 28

d. Claims 4-5 are unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Krieger et al., (Krieger) US 2004/0130298.

The Examiner states 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 incorporated the switch of Krieger into the jump starter apparatus of Richardson because of numerous advantages such as their fast switching speeds, their low loss, and are preferably high power, and very low on-resistance types." Further, "[i]t would therefore be obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to use one opto-isolator of the type as disclosed by Krieger into the jump starter apparatus of Richardson to sense both the presence of a vehicle battery and a correct polarity connection thereby preventing any other current flow and allow for safe removal of the alligator clamps, as per the teachings of Krieger **(see ¶ [0038], [0041]).**"

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)**.

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Richardson and Krieger do not disclose a jump starting apparatus, including a USB charge circuit and USB connector, let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB connector to the USB charge circuit."

In view of the foregoing, it is submitted that nothing in ***Richardson*** 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.

IX. Rejection under 35 USC § 103, beginning on page 29

e. Claim 6 is unpatentable/obvious over Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in 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 having 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 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.

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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)**.

Richardson and Wanzong both do not disclose a jump starting apparatus, including a USB charge circuit and USB connector, let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB connector to the USB charge circuit."

In view of the foregoing, it is submitted that nothing in ***Richardson*** 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.

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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 two-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,

VORYS, SATER, SEYMOUR and PEASE LLP

/William L. Klima/
William L. Klima, Registration No.: 32422
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Date: January 12, 2021

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05

CONFIRMATION NO. 1008

20230
Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
Washington, DC 20006-1152

POA ACCEPTANCE LETTER

OC000000122652211

Date Mailed: 01/15/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 01/12/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/byemane/

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

23230 7590 02/10/2021
Vorys, Sater, Seymour and Pease LLP
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EXAMINER
DIAO, M BAYE

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
02/10/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patlaw@vorys.com

Office Action Summary	Application No. 16/450,422	Applicant(s) Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 01/12/2021.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-23 and 29-51 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-23 and 29-51 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☑ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 06/24/2019 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Response to Amendment

2. Acknowledgement is made of amendment filed on 01/12/2021 in which claims 1-2,5-11,14-15,17-21,23, 29-31,33,35,37, and 38 are currently amended, claims 24-28 have been canceled while claims 39-51 have been newly added. By this amendment, claims 1-23,29-51 are now pending in the application.

Specification

Claim Objections

3. Claims 1 and 31 are objected to because of the following informalities: Claim 1 recites: "a control system or circuit connected to and controlling the power switch, the system or circuit configured to detect whether the positive and negative polarity battery terminal connectors have a proper connection with the positive and negative polarity battery terminals of the depleted or discharged battery prior to turning on the power switch or circuit". There is insufficient antecedent basis for this underlined limitation in the claim since a control system or circuit was previously recited.

4. Similarly claim 31 is objected to fro the following reasons: Claim 31 recites: "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 power switch control system or circuit detects either that…". For examination purpose, **insert --the--** between "when" and "power".

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5. Claims 7-8 are also objected to due to minor informalities. Claims 7-8 recite "…the microcontroller". There is insufficient antecedent basis for this underlined limitation in the claims.

6. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-23,39-51 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

8. Claim 1 recites the limitation "a control system or circuit connected to and controlling the power switch, the system or circuit configured to detect whether the positive and negative polarity battery terminal connectors have a proper connection with the positive and negative polarity battery terminals of the depleted or discharged battery prior to turning on the power switch or circuit" in lines 34-35. There is insufficient antecedent basis for this limitation in the claim.

9. Claims 7-8 recite "…the microcontroller". There is insufficient antecedent basis for this underlined limitation in the claims.

10. Claims 2-23, and 39-51 depend either directly or indirectly from claim 1 and thus are also rejected for the same reasons since they inherit the same deficiencies as their parent claim 1.

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Claim Rejections - 35 USC § 103

3. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

4. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-3,5,7-10,12-15,17-21,23,31-41,43,46-51 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).

7. Regarding claims 1,29-30, and 38: Richardson discloses A jump starting apparatus**(10)(Abstract;¶[0001])** configured for boosting or charging a depleted or discharged battery**(battery of vehicle 28)(¶[0006])** having a positive polarity battery terminal**(Red clamp; Fig. 2.C)** and a negative polarity battery terminal**(black clamp)(Note-jumper cable 60 has red**

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(positive) and black (negative) clamps. (EX1010 at ¶[0020]); Richardson discloses "a pair of conductive leads for connecting the supplemental power to an engine electrical system), the jump starting apparatus comprising: a ~~internal~~ power supply**(jump starter batteries 22 provide power to the battery of the vehicle(28) to be jump started; see ¶[0006] and Fig. 2C**); a positive polarity battery terminal connector**(labeled Red clamp; Fig. 2.C)** configured **(via cables 60)**for connecting the jump starting apparatus to the positive polarity battery terminal of the depleted or discharged battery**(battery of vehicle 28; see Fig. 2C**); a negative polarity battery terminal connector**(labeled black clamp; Fig. 2.C)** configured **(via cables 60)**for connecting the jump starting apparatus to the negative polarity battery terminal of the depleted or discharged battery**(battery of vehicle 28)(note- Richardson discloses that the jumper cables have a positive and negative polarity, see ¶[0012]) ("a reverse voltage sensor 24 monitors the polarity of the jumper cables on line 26")**; a power switch or circuit**((contact relay 34); see Figs. 1 and 2C)** configured to turn on **(or off)(as per claim 38)** power from the power supply**(jump starter batteries 22)** to the positive and negative polarity battery terminal connectors**(Red and Black clamps; see Fig. 2C)**; a control system or circuit**(12)** connected to and controlling the power switch**(34)**, the **control** system or circuit**(12)** configured to detect**(¶[0014] ("A reverse voltage LED 48 is illuminated when the microprocessor 12 determines that a reverse voltage jumper cable voltage is detected by reverse voltage sensor 24"). Importantly, the circuitry which forms reverse voltage sensor 24 is separate and distinct from the circuity forming vehicle voltage sensor 30. (see Fig. 2B). Furthermore, reverse voltage sensor 24 and vehicle voltage sensor 30 produce separate and distinct signals which are transmitted to microprocessor 12 on separate and distinct lines H and I respectively. (EX1010 at Fig.2B)** whether the positive and negative polarity battery terminal

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connectors have a proper connection with the positive and negative polarity battery terminals of the depleted or discharged battery(**battery of vehicle 28; see Fig. 2C**) prior(**note- Only after the reverse polarity and battery presence tests have been conducted at steps 214 and 252 does the process proceed to step 268 where microprocessor 12 sends a signal to close contact relay 34. (See also Fig. 3, Fig. 6, ¶[0014] and [0027]**))to turning on the power switch or circuit(**34**)(**see ¶[0014]**)(**note- Richardson also makes clear that the microcontroller only closes relay 34 if the reverse polarity sensor 24 and vehicle voltage sensor 30 indicate the presence of a vehicle battery connected with proper polarity. For example, Richardson states that "when the jump starter 10 is initially powered on 200, the microprocessor initializes the hardware . . . . then performs a self-test operation 208 where . . . all sensors 20, 24, 30, 32, 38, 40 . . . are tested". Richardson further discloses The process of measuring the vehicle battery voltage necessarily entails detecting the presence of a vehicle battery connected to the positive and negative output ports since reading a sufficiently low voltage would indicate either the absence of a vehicle battery or a battery with a voltage below a required threshold for detection. Only after the reverse polarity and battery presence tests have been conducted at steps 214 and 252 does the process proceed to step 268 where microprocessor 12 sends a signal to close contact relay 34. (See also Fig. 3, Fig. 6, see also ¶[0014] and [0027]).**

8. Richardson does not teach the following limitations:

- a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and

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providing charge input from the USB charger through the USB connector to the USB charge circuit

- Xinfang is an analogous art and pertains to the same field of endeavor namely mini portable jump starter that can be carry in a pocket by a user**(Xinfang; col. 9, lines 1-8).** Xinfang discloses factual evidence of a USB charge circuit **(36,54)** connected to the power supply **(16)** via charging port**(34),** the USB charge circuit configured for converting power from a USB charger**(36)** to charge voltage and current**(via constant current constant voltage output circuit 66)** for charging the power supply**(16)(note- 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**); and a USB connector**(USB interfaces 38,40)** configured for connecting to the USB charger**(36)** and providing charge input from the USB charger**(36),** through the USB connector**(38,40)** to the USB charge circuit**(combination of 36 and 54)(Xinfang; col. 4, lines 42-58).**

9. It 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.

10. Accordingly claims 1,29-30, and 38 would have been obvious.

11. Regarding claim 2, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further discloses, wherein the power supply comprises a lithium ion battery **(Col.1, lines 67- col. 2, line 1).**

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12. Regarding claim 3, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 2. Xinfang further discloses, wherein the lithium ion battery comprises a battery pack of multiple lithium ion batteries **(Xinfang further discloses the use of a battery cell (which can be lithium ion) comprised of four battery cells. (EX1008 at col.5, lines 9-11)**.

13. Regarding claim 5, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the control system or circuit**(12)** is configured for detecting a presence**(via battery presence sensor or circuit 30)(note- vehicle voltage sensor 30 which consists of two resistors and a capacitor as shown in Fig. 2B below. Furthermore, these two resistors are connected to vehicle battery 28 via the line designated as Q which as shown in Fig. 2A connects directly to line A shown in Fig.2C and which provides an output signal via line I. These resistors are connected to vehicle battery 28 via the line designated as Q which as shown in Fig. 2A connects directly to line A shown in Fig. 2C and which provides an output signal via line I)** of the depleted or discharged battery connected between the positive and negative polarity battery terminal connectors**(note-Richardson discloses that voltage sensor 30 detects whether or not the jumper cables are connected to the vehicle battery. For example, Richardson states that "[i]f the system detects an increase in the difference between the measured jump starter battery voltage 20 and the voltage measured 30 across the contact relay 34 indicating that one of the jumper cables has been disconnected 302 from the vehicle's battery system or starter system 28 then a jumper cable unplugged error count is incremented 304". (EX1010 at ¶[0033])** and detecting a proper polarity connection**(as detected by reverse voltage sensor 24)(note-reverse voltage sensor 24 monitors the polarity of the jumper cables on line 26**

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which are connected to the vehicle's electrical system 28." (EX1010, ¶[0012]; see also ¶[0020] ("once jumper cables 60 have been connected to the vehicle to be started 28, the voltage is measured by reverse voltage sensor 24 to determine if the cables have been properly connected to the vehicle 214") of the positive and negative polarity terminals with the positive**(Red clamp)** and negative **(Black clamp)** polarity battery terminal connectors**("A reverse voltage LED 48 is illuminated when the microprocessor 12 determines that a reverse voltage jumper cable voltage is detected by reverse voltage sensor 24"). Importantly, the circuitry which forms reverse voltage sensor 24 is separate and distinct from the circuity forming vehicle voltage sensor 30. (see Fig. 2B). Furthermore, reverse voltage sensor 24 and vehicle voltage sensor 30 produce separate and distinct signals which are transmitted to microprocessor 12 on separate and distinct lines H and I respectively. (EX1010 at Fig.2B)**.

14. Regarding claim 7, Richardson in view of Xinfang discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a temperature sensor**(38)(Fig. 1)(¶[0013]** configured to detect temperature of the power supply**(jump starter's batteries 22)** and to provide**(see signal output by 38 and fed into 12 in Fig. 1)** a temperature signal to the microcontroller**(12).**

15. Regarding claim 8, Richardson in view of Xinfang discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a voltage measurement circuit**(20)(see Fig. 1; ¶[0012])** configured to measure output voltage of the power supply**(jump starter batteries 22)** and to provide a voltage measurement signal**(output signal of 20 fed into 12)** to the microcontroller**(12)(see Fig. 1).**

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16. Regarding claim 9, Richardson in view of Xinfang discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a voltage regulator**(Fig. 2A; regulator LM7805 is a 5V regulator although not labeled)** configured to convert output voltage of the power supply**(22)** to a voltage level appropriate to provide operating power to internal components of the jump starting apparatus.

17. Regarding claim 10, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further discloses, further comprising a USB output port**(38,40)** configured to provide charging power from the power supply**(16)** to a USB-chargeable device**(Xinfang; col. 4, lines 59- 62)**.

18. Regarding claim 12, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches factual evidence of a portable jump starter that utilizes a flashlight circuit configured to provide a source of light to a user. **(Xinfang col.1, lines 45-47 ("The present invention according to an embodiment provides a mobile power bank, vehicle ignition system jump starter, and a flashlight."), see also col. 4, lines 24-25 ("The second plate 24 may be provided with a master control button 26 and a flashlight 28")**. Xinfang also discloses the use of flashlight to provide a SOS signal in an emergency situation. **(Xinfang; col. 8, lines 37-44).**

19. Accordingly claim 12 would have been obvious.

20. Regarding claim 13, modified Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 12. Richardson further discloses several illuminating means including at least one LED**(Richardson; ¶[0014]).**

21. Regarding claim 14, modified Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 13. Xinfang further discloses, wherein the

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control system or circuit is configured to control the at least one LED to provide a visual alarm indicating an emergency situation. Note-Xinfang discloses the use of a flashlight to provide a SOS signal in an emergency situation. **(Xinfang col.8, lines 37-44 ("After turning on the flashlight 28, if the control module 58 detects that the master control button 26 is activated, it may control the flashlight in multiple illumination modes, such as a constant light mode, flashing strobe light mode, and flashing S.O.S. (three sequential short flashes, followed by three sequential long flashes, followed again by three sequential short flashes) signal light mode").**

22. Therefore it would have been obvious to one of ordinary skill in the art to combine the teachings of Xinfang with those of Richardson to include a LED flashlight and configure it to provide a visual alarm indicating an emergency situation so as to warn the user in an emergency situation.

23. Accordingly claim 14 would have been obvious.

24. Regarding claim 15, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses a plurality of visual indicators **(LED 54 and LCD 46)** configured to display user battery remaining capacity. For example, Richardson states: **"If the voltage level of the system batteries 22 measured by the voltage sensor 30 is equal to a state of charge of eighty percent or more below a fully charged voltage level 222, an error flag is set and the event recorded in memory 224. The charge battery LED 54 is illuminated and the LCD 46 displays a "Charge Battery" message 225." Ex. 1010, ¶[0021]. Thus, the two visual indicators (LED 54 and LCD 46) in Richardson display remaining capacity status of said internal power supply (a state of charge of eighty percent or more below a fully charged voltage level). Furthermore**

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Richardson discloses "[a] "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210." Ex. 1010, ¶[0020]. Thus, the "Reverse Polarity" error message on the LCD 46 and illuminated LED 48 warn a user when a vehicle battery is connected with reverse polarity, prompting the user to correct the connection). Xinfang also teaches, the apparatus including an operation indicator LED(**32**) to provide visual indication of the power supply capacity status(**Xinfang; col. 4, lines 45-51**).

25. Regarding claim 17, Richardson in view of Xinfang teaches or discloses all the limitations of claim 1. Richardson further discloses, 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. **(note-"[a] "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210." Richardson, ¶([0014],[0020]). Thus, the "Reverse Polarity" error message on the LCD 46 and illuminated LED 48 warn a user when a vehicle battery is connected with reverse polarity, prompting the user to correct the connection).**

26. Regarding claim 18, Richardson in view of Xinfang teaches or discloses all the limitations of claim 1. Richardson further discloses, the apparatus 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 **(note LCD display 46 allows a start message)the power on status) when the jump starter is powered on.**

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Richardson further discloses "[r]eferring to FIGS. 2A, 2B, 2C, 2D and 3-8, when the jump starter 10 is initially powered on 200, the microcontroller 12 initializes the hardware, reads all system parameters and variables, and initializes the interrupt service routine 202 (See FIG. 8). All stored performance history is read from the onboard, non-volatile memory 204 and a start message is displayed 206 on the LCD display 46." Richardson, ¶0015. The start message displayed on the LCD display comprises a visual indicator configured to display the power on status of the apparatus. Additionally, Richardson discloses a separate visual indicator displaying the jump start boost power status of power supplied to the output port. For example, Richardson states "[i]f the voltage level of the jump starter batteries 22 drop below a value of twenty percent of the normal level, a charge battery LED 54 is illuminated."(¶[0014],[0020]).

27. Accordingly, claim 18 would have been obvious.

28. Regarding claim 19, Richardson in view of Xinfang discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus 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 when the vehicle battery isolation sensor is unable to detect presence of a vehicle battery(**note- the jump starter apparatus 10 also includes automatic (42) and manual (44) pushbutton inputs to accept user input to select either automatic or manual operation; see ¶[0013]-[0016];[0025]-[0026], and [0039]**).

29. Regarding claim 20, Richardson in view of Xinfang discloses all the claimed invention as discussed and set forth above in claim 19. Richardson further discloses, wherein the control system or circuit(**12**) is configured to detect actuation of the manual override switch(**44**) for at

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least a predetermined period of time before activation of the manual override mode**(see ¶[0039],[0041]-[0042]**).

30. Regarding claim 21, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, the apparatus further comprising a jumper cable device**(60) (via red and black clamps see Fig. 2C**) but does not teach the jumper cable device including a plug configured to plug into said output port, a pair of cables integrated with the plug at one respective end thereof and being configured to be connected to terminals of a battery at another respective end thereof. Xinfang further discloses a jumper cable with a plug at one end and a pair of cables at the other end configured to be connected to terminals of a battery. (Xinfang; col. 2, lines 40-43 ("Optionally, the apparatus further comprises a vehicle ignition cable having a first end coupleable to the ignition output port and a second end coupleable to terminals of a vehicle battery").

31. Accordingly claim 21 would have been obvious.

32. Regarding claim 23, Richardson in view of Xinfang discloses all the claimed invention as discussed and set forth above in claim 21. Xinfang further discloses, wherein the output and the plug are dimensioned so that the plug will fit into the output port**(46)** only in one specific orientation**(Xinfang; Fig. 2**).

33. **Claims 22 is rejected under 35 U.S.C. 103 as being unpatentable over by 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 Richardet Jr. USPAT 8,172,603 (Exhibit 1014 IPR2020-00944).**

34. Regarding claim 22, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 21. However the combination of Richardson in view of

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Xinfang fails to expressly teach, the limitations of, "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".

35. Richardson and Richardet both relate to jump starting vehicle engines. Ex. 1014 at 2:33-36. Richardet discloses "means to provide a battery terminal connection which provides secure and stable connection to a motor vehicle battery or the like adaptable to a variety of common scenarios and which is simple and quick for an average user." **(Richardet; col. 1, lines 60-65).**

36. Richardet further discloses and shows in **Fig. 2A,** discloses a pair of ring terminals 23 to connect a pair of cables 24, 25 with battery terminals 120 and 130 **(Richardet; col. 4, lines 57-65**).

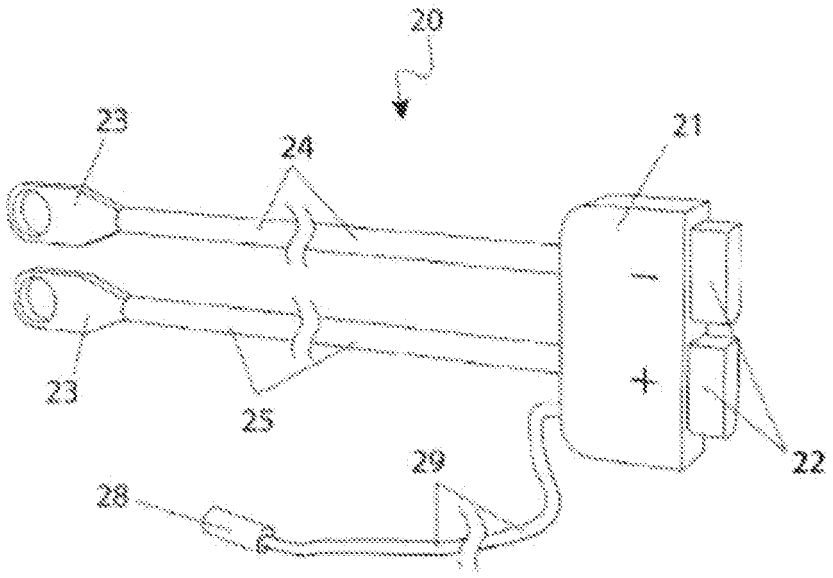


Fig. 2a

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Therefore it would have been obvious to one having 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 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**).

37. Accordingly claim 22 would have been obvious.

38. Regarding claim 31, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the power switch control system or circuit**(12)** does not switch on the power supply to connect the power supply**(22)** to the depleted or discharged battery**(battery of vehicle 28 that is to be jump started)** when the power switch control system or circuit**(12)** detects either that (i) the depleted or discharged battery is absent**(as detected by vehicle battery presence detector 30)** 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**(as determined by reverse polarity detection sensor 24)(see also ¶[0014] and [0027]**).

39. Regarding claim 32, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 30. Richardson further discloses, wherein the power switch control system or circuit**(12)** is configured to detect presence **(via signal output by voltage sensor 30 and input into control system or circuit 12)** of the depleted or discharged battery**(battery of vehicle 28)** when connected between the positive and negative battery connectors**(red and black clamps)** and to detect polarity**(via signal output by reverse polarity**

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sensor 24 into control system or circuit 12) 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**(see ¶[0012],[0014]**).

40. Regarding claim 33, Richardson discloses all the claimed invention as set forth and discussed above in claim 30. Richardson further discloses, wherein the power switch control system or circuit comprises a microcontroller**(system microcontroller 12; Fig. 1**) configured for providing an output**(58)** controlling the power switch**(contact relay 34)(note-A contact relay control output 58 operates the contact relay 34. When the jump starter operation has been successfully initiated, the contact relay 34 is closed and the jump starter batteries 22 are connected to the starter system or batteries of the vehicle to be started 28. The contact relay 34 is opened when a successful start cycle has been completed; see¶[0014]**).

41. Regarding claim 34, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 33. Richardson further discloses, wherein the microcontroller**(12)** receives input**(14)(see ¶[0011]**) from one or more sensors**(20,24,30,32,38,40)** configured to detect presence**(via vehicle presence detector sensor 30)(see ¶[0012])** of the depleted or discharged battery**(battery of vehicle 28)** when connected between the positive and negative battery connectors**(black and red clamps)** and to detect polarity**(via sensor 24)** of the depleted or discharged battery when connected between the positive and negative battery connectors.

42. Regarding claim 35, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 34. Richardson further discloses, wherein the one or more sensors includes one sensor**(30)** configured to detect presence of the depleted or discharged battery when connected between the positive and negative battery terminal connectors, and

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another sensor configured to detect proper polarity**(24)** of the depleted or discharged battery when connected between the positive and negative battery connectors**(red and black clamps of cables 60)(see Figs. 2A-2D).**

43. Regarding claim 36, Richardson in view of Xinfang all the claimed invention as set forth and discussed above in claim 35. Richardson further discloses, wherein the one or more sensors comprises one or more sensing circuits**(20,24,30,32,38,40)(see ¶[0011] and see Figs. 2A-2C for the different sensor circuits 20, ,24, 30, 32, 38,and 40**).

44. Regarding claim 37, Richardson discloses all the claimed invention as set forth and discussed above in claim 33. Richardson further discloses, wherein the microcontroller**(12)** is configured to turn on the power switch**(34)** to provide power from the power supply**(jump starter batteries)(22)** to the depleted or discharged battery**(battery of vehicle 28)** only when the depleted or discharged battery is determined by the microcontroller**(12)** to be present and connected to the jump starting apparatus **(10)**with the proper polarity**(see¶[0012],[0014])(Note-Richardson discloses that the power switch is turned on to cause the internal power supply to be connected to the output port in response to signals from the sensors indicating (1) the presence of a vehicle battery at said output port and (2) proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs. Richardson also discloses or teaches that the power switch is not turned on when signals from the sensors indicate either the absence of a vehicle battery at the output port or improper polarity connection of positive and negative terminals of the vehicle battery with the positive and negative polarity outputs. Richardson discloses in FIGS. 3-8 "flow charts of the processing steps of the portable power source of the present invention." Ex. 1006, ¶0010. This sequence of processing steps involves several checks**

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performed by the microcontroller before turning on the power switch to jump start the vehicle. As discussed below, these checks include detecting (1) the presence of a vehicle battery at said output port and (2) proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs. 77. Richardson discloses that the reverse voltage sensor 24 detects whether jumper cables that have been manually connected to the vehicle battery have been properly connected or if there is a reverse connection. Richardson discloses or teaches that the power switch for charging the vehicle battery cannot be turned on unless there is a proper connection of the cables. For example, referring to FIG. 3 (a portion of which is reproduced below), Richardson states: If the system does not detect a battery charging voltage 212, once jumper cables 60 have been manually connected to the vehicle to be started 28, the voltage is measured by the reverse voltage sensor 24 to determine if the cables have been properly connected to the vehicle 214. If the voltage measured is significantly less than the voltage of the jump starter capacitors 21 and batteries 22, then a reverse polarity connection of the jumper cables to the vehicle is determined and an error flag is set and the event saved in nonvolatile memory 216. A "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210. Ex. 1010, ¶[0020]).

45. Regarding claim 39, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further discloses, the apparatus further comprising a DC-DC converter**(included in battery circuit board 44)(note- The battery circuit board 44 may be provided with voltage boosting circuitry to step up the output**

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voltage from the battery cell 42 to the ignition output port 46 to provide an output voltage higher than about 13.6V; see col. 5, lines 29-40 and Fig. 2) connected to the USB charge circuit(**36**).

46. Regarding claim 40, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 39. Xinfang further discloses, wherein the DC-DC converter is configured for up-converting the input voltage received by the USB connector(**38,40**) **(included in battery circuit board 44)(note- The battery circuit board 44 may be provided with voltage boosting circuitry to step up the output voltage from the battery cell 42 to the ignition output port 46 to provide an output voltage higher than about 13.6V; see col. 5, lines 29-40 and Fig. 2**).

47. Regarding claim 41, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 40. Xinfang further discloses, wherein the input voltage is 5V(**inherent for a standard USB connector**) that is up-converted to 13.6 VDC for charging the power supply. Richardson in view of Xinfang differs from the claimed invention in that the input voltage is up-converted to 12.4V instead of 13.6V. It would have been an obvious matter of design choice to configure the output of the voltage boosting circuit of Xinfang to up-convert the 5V input of the USB connector to 12.4V as recited since such modification is an obvious matter of design choice to meet load power requirements. Furthermore, when a device or technology is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or in a different one, so that if a person of ordinary skill can implement a predictable variation, the variation is likely obvious.

48. Regarding claim 43, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches, the apparatus further

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comprising a USB output circuit**(36)** connected to the power supply**(16)** to provide a USB output for charging portable electronic devices from the power supply**(16)**, and a USB output connector**(38,40)** connected to the USB output circuit**(Xinfang; col. 4, lines 42-58)(note- Xinfang discloses that the USB output module 36 is connectable via a USB cable to support USB charging of electronic devices where the battery module 16 provides power to the electronic devices; see col. 4, lines 59-62).**

49. Regarding claim 46, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches, the apparatus including an operation indicator LED**(32)** to provide visual indication of the power supply capacity status**(Xinfang; col. 4, lines 45-51)**.

50. Regarding claim 47, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches, the apparatus including an operation indicator LED**(32)** to provide visual indication of the switch activation status indicating power is being provided to the depleted or discharged battery**(16) (Xinfang; col. 4, lines 45-51)**.

51. Regarding claim 48, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the proper connection with the positive and negative polarity battery terminals of the depleted or discharged battery prior to turning on the power switch or circuit is a proper polarity connection**(see Ex. 1010, ¶[0020] and see¶[0012],[0014]; note- Richardson discloses or teaches that the power switch for charging the vehicle battery cannot be turned on unless there is a proper connection of the cables).**

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52. Regarding claim 49, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the control system or circuit comprises one or more sensors**(battery presence sensor 30; reverse polarity sensor 24; 20,32,38, and 40)** connected to a microprocessor**(12)** for determining whether the depleted or discharged battery**(battery of vehicle 28)** is present and connected between the positive and negative polarity battery terminal connectors**(see Richardson ¶[0010]-[0015] and [0027])¶[0015]**).

53. Regarding claim 50, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the control system or circuit comprises one or more sensors**(battery presence sensor 30; reverse polarity sensor 24; 20,32,38, and 40)** connected to a microprocessor**(12)** for determining whether the depleted or discharged battery**(battery of vehicle 28)** is connected to the positive and negative polarity battery terminal connectors with proper polarity**(see also ¶[0010]-[0015] and [0027]).**

54. Regarding claim 51, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the control system or circuit comprises one or more sensors**(battery presence sensor 30; reverse polarity sensor 24; 20,32,38, and 40)** connected to a microprocessor for determining whether the depleted or discharged battery**(battery of vehicle 28)** is present and connected between the positive and negative polarity battery terminal connectors and determining whether the depleted or discharged battery is connected to the positive and negative polarity battery terminal connectors with proper polarity**(see also ¶[0010]-[0015] and [0027]).**

55. **Claim 4 is rejected under 35 U.S.C. 103 as being unpatentable over by Richardson et al., (Richardson) US 2009/0174362 (Exhibit 1010 IPR2020-01387) in view of Xinfang**

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USPAT 9,506,446 (Exhibit 1008 IPR2020-01387) and in further view of Krieger et al., (Krieger) US 2004/0130298.

56. Regarding claim 4, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However, Richardson fails to expressly disclose the limitations of, wherein the power switch comprises one or more FETs.

57. Krieger is an analogous art and pertains to the same field of endeavor, namely battery jump starters for vehicle engines and discloses factual evidence of, wherein the power switch comprises one or more FETs**(12a-12d)(see Krieger; ¶[0030] and Fig. 5).**

58. It would have been obvious to one having 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 because of numerous advantages such as their fast switching speeds, their low loss, and are preferably high power, and very low on-resistance types.

59. Accordingly claim 4 would have been obvious.

60. **Claims 6 is rejected under 35 U.S.C. 103 as being unpatentable over by 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 Wanzong et al., (Wanzong) USPAT 5,319,298(all cited by Applicants).**

61. Regarding claim 6, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1 but fails to expressly teach the limitations of, the apparatus 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.

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62. Wanzong is an analogous art**(abstract)** and discloses factual evidence of a battery maintainer and charger apparatus for battery vehicles**(col. 2, lines 59-67**). Wanzong discloses an "isolation diode 160," which acts as the power diodes to prevent back-charging of said internal power supply from an electrical system connected to said output port. As shown in **Fig. 1** of the reference**(see Fig. 1 of Wanzong),** the isolation sensor **160** is between the output port **(output terminals 170 and 180)** of the charger apparatus and the internal power supply **(transformer 20/ full wave bridge rectifier 30/main capacitor 40**). While Wanzong discloses a single power diode**(160),** it would have been obvious to one having 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 to prevent back-charging and damage to the charging circuit during or after charging process.

63. Accordingly claim 6 would have been obvious.

64. Claim 11 is 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) in further view of Inskeep US 2014/0159509.

65. Regarding claim 11, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang discloses, further comprising a USB charging input port**(34)** configured to provide charging power from an external power source**(external power adaptor**) to the internal power supply**(16).** However Richardson in view of Xinfang fails to expressly disclose, the USB charging port comprising the USB connector. Instead, Xinfang discloses the USB charging port**(34)** adjacent to the USB connector **(38,40).**

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66. Inskeep is an analogous art directed to battery boost jump starter (title). Inskeep discloses factual evidence of, the USB charging port comprising the USB connector**(9)(¶[0013],[0016])**

67. Richardson, Xinfang and Inskeep are analogous art in battery jump starter. It would have been obvious to one having ordinary skill in the art before the effective filing date of the claimed invention to have incorporated into the jump starter device of Richardson as modified by Xinfang, to having the USB charging port comprising the USB connector. The advantage for doing so is to enable easy access to external electronic loads to be charged while making the unit compact and minimizing the number of parts and thereby lowering the manufacturing cost.

68. Accordingly claim 11 would have been obvious.

69. **Claims 16 are rejected under 35 U.S.C. 103 as being unpatentable over by 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 Baxter (Exhibit 1011 IPR2020-00944)(all cited by Applicants).**

70. Regarding claim 16, Richardson in view of Xinfang discloses all the claimed invention as set forth and discussed above in claim 15. However, Richardson does not expressly teach, "wherein said plurality of visual indicators comprises a plurality of LEDs providing output light of different colors."

71. Baxter discloses a plurality of LEDs providing output light of different colors to indicate a variety of conditions. For example, Baxter states: For example, if proper connection conditions are detected and it is determined that it is safe to make a connection, the logic circuit or microcontroller 26 can activate a green LED as a signal of proper connection prior to or concurrent with making an electrical connection between the two low- voltage circuits connected to the input terminals 20 and the output terminals 22. Alternatively, a red LED might be

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activated if an improper connection is detected, along with activation of the alarm 30. Different signals **(via the alarm 30 and/or the optical signal 32 or optical signals 32)** may be used to indicate different detected conditions **(e.g. reversed polarity, no connection, short circuit, etc.). (Baxter col. 10, lines 24-31 and col. 12, lines 18-29)**.

72. Therefore, Baxter utilizes a plurality of LEDs providing output light of different colors to indicate a variety of conditions in the battery charger. It 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 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.

73. Accordingly claim 16 would have been obvious.

Allowable Subject Matter

74. Claims 42,44-45 would be allowable if rewritten to overcome the rejection(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.

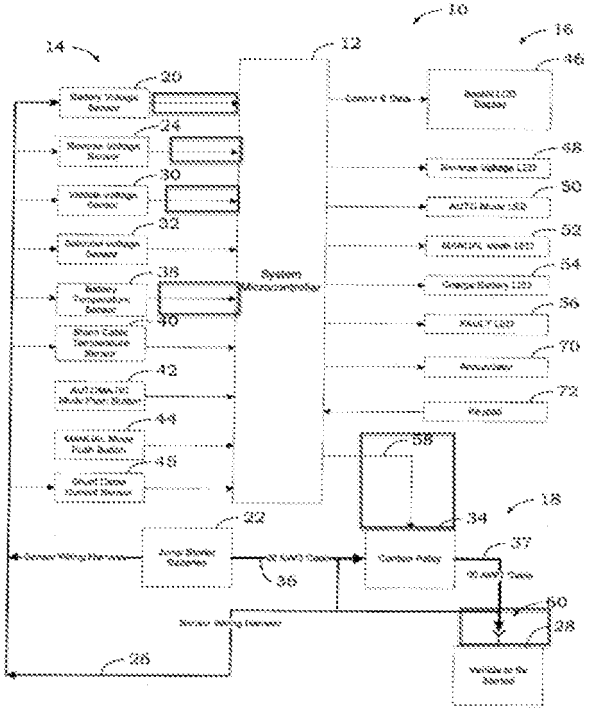
75. Regarding claim 42, the prior art of record either taken alone or in combination thereof fails to teach or reasonably suggest, in the claimed combination, wherein the USB charge circuit is configured to turn on and off the DC-DC converter by an output of the control system or circuit comprising a microcontroller.

76. Regarding claim 44, the prior art of record either taken alone or in combination thereof fails to teach or reasonably suggest, in the claimed combination, further comprising a USB output control circuit connected to a microcontroller and configured to allow the USB output to

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be turned on and off by software control to prevent the internal lithium battery from getting too low in capacity.

77. Regarding claim 45, the prior art of record either taken alone or in combination thereof fails to teach or reasonably suggest, in the claimed combination, wherein the USB connector includes a voltage divider for enabling charge to certain electronic devices.



Richardson's *Fig. 1* reproduced above

Response to Arguments

78. Applicant's arguments with respect to claim(s) claims 1-23,29-51 have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection of record for any teaching or matter specifically challenged in the argument.

79. Furthermore, applicant mainly argues that the amended claims with the additional limitations of, "*a jump starting apparatus, including a USB charge circuit and USB connector let alone the claimed subject matter, including "a USB charge circuit connected to the power supply, the USB charge circuit configured for converting power from a USB charger to charge*

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voltage and current for charging the power supply; and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger through the USB connector to the USB charge circuit", as required by present claims 1, 7-9, 15, 17-20, 23, 29-38.

80. Examiner respectfully disagrees and submits that Xinfang discloses factual evidence of a USB charge circuit **(36,54)** connected to the power supply **(16)** via charging port**(34),** the USB charge circuit configured for converting power from a USB charger**(36)** to charge voltage and current**(via constant current constant voltage output circuit 66)** for charging the power supply**(16)(note- 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**); and a USB connector(**USB interfaces 38,40; see col. 4, lines 42-44)** configured for connecting to the USB charger**(36)** and providing charge input from the USB charger**(36),** through the USB connector**(38,40)** to the USB charge circuit**(combination of 36 and 54)(Xinfang; col. 4, lines 42-58).**

81. Therefore Xinfang does teach two USB connectors 38,40. Additionally, the limitations of, "*converting power from a USB charger to charge voltage and current for charging the power supply" are functional limitations and intended use and can be applied to any device capable of being or receiving charged from a USB device whether it is the internal power supply or jump start battery of the apparatus or the battery of a connected external electronic device.*

82. Therefore rejection have been maintained and new rejections under 103 have been made in view of amendments.

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Citation of Prior Art

83. For a list of related prior art references not mentioned above but disclose related apparatus or method, see Form PTO-892.

84. USPAT 7,679,317 to Veselic discloses the general state of the art regarding systems and methods for charging a chargeable USB device.

85. USPAT 8,736,227 to Chadbourne et al., (Chadbourne) discloses the general state of the art regarding peripheral device host charging.

Conclusion

86. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a)

87. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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88. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M'BAYE DIAO whose telephone number is (571)272-6127. The examiner can normally be reached on M-F; 9:00AM-6:30PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DREW A DUNN can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M'BAYE DIAO
Primary Examiner
Art Unit 2859

/M BAYE DIAO/
Primary Examiner, Art Unit 2859
February 5, 2021

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Notice of References Cited	Application/Control No. 16/450,422	Applicant(s)/Patent Under Reexamination Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20140159509-A1	06-2014	Inskeep; Mathew	H02J7/342	307/150
*	B	US-7679317-B2	03-2010	Veselic; Dusan	G06F1/266	320/107
*	C	US-8736227-B2	05-2014	Chadbourne; Peter	G06F1/266	320/107
	D					
	E					
	F					
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	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/07/2020	02/05/2021							
	1	✓	✓							
	2	✓	✓							
	3	✓	✓							
	4	✓	✓							
	5	✓	✓							
	6	✓	✓							
	7	✓	✓							
	8	✓	✓							
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	10	✓	✓							
	11	✓	✓							
	12	✓	✓							
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	37	✓	✓							
	38	✓	✓							
	39		✓							
	40		✓							
	41		✓							
	42		✓							

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CLAIM		DATE								
Final	Original	08/07/2020	02/05/2021							
	43		✓							
	44		✓							
	45		✓							
	46		✓							
	47		✓							
	48		✓							
	49		✓							
	50		✓							
	51		✓							

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

CPC - Searched*		
Symbol	Date	Examiner
B60L53/14 H02J7/342 H02J7/0047 H02J7/0034 H02J7/0029 H02J1/122 H02J7/00 H02J7/0048 H02J2310/46	08/07/2020	MD

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
320	105	08/07/2020	MD

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

Search Notes		
Search Notes	**Date**	**Examiner**
PE2E SEARCH(Search Notes Attached).	08/07/2020	MD
PLUS Search Conducted.	07/28/2020	MD
Inventor Name and Assignee Search (SEARCH).	08/07/2020	MD
Parent Applications Noted.	08/07/2020	MD
IPR2018-00503 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-00944 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-01387 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2021-00309 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	02/04/2021	MD
Updated search above.	02/04/2021	MD
(307/150 Text Search Only -- see attached Search Printout).	02/04/2021	MD
IP.com Search Conducted.	02/04/2021	MD

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:42 PM
L2	24862	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:43 PM
L3	166340	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:43 PM
L4	0	vehicle adj batter$3 adj isolat$3 adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:44 PM
L5	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:47 PM
L6	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:48 PM
L7	0	reverse adj popularity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:49 PM
L8	186	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:49 PM
L9	0	(microcontroller microcomputer microprocessor processor controller) and L1 and L2 and L3 and L6 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L10	2960317	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L11	0	L1 and L2 and L3 and L6 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L12	0	L1 and L2 and L3 and L6	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L13	0	L1 and L2 and L3 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM
L14	15	L1 and L2 and L3 and L10	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:51 PM

L15	3	L6 and L8	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:52 PM
L16	195	320/105.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:55 PM
L17	1845	320/110-112.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:55 PM
L18	0	(L16 L17) and (L14 L15)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:56 PM
L19	22	("5635817"|"8493021"|"7872361"|"20040130298"|"20100301800"|"5921809"|"6140796"|"6632103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 12:57 PM
L20	0	((integrated combo) adj jumper) with ((plug connector) same (other another) adj end$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:48 PM
L21	0	((integrated combo combination assembly) adj jumper) with ((plug connector) same (other another) adj end$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:48 PM
L22	0	((integrated combo combination assembly) adj jumper) and ((plug connector) same (other another) adj end$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L23	222	((integrated combo combination assembly) adj jumper) and ((plug connector))	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L24	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L25	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L26	186	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:49 PM
L27	3	L24 and L25 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23

							03:49 PM
L28	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:50 PM
L29	24862	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:50 PM
L30	48	L28 and L29	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:50 PM
L31	0	L23 L24 L25 L26	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:50 PM
L32	0	L23 L24 L25	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:50 PM
L33	0	L23 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L34	0	L23 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L35	1	L26 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L36	8	L24 L30	US-PGPUB; USPAT; EPO	AND	ON	ON	2014/10/23 03:51 PM
L37	12	L27 L35 L36	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L38	195	320/105.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L39	1845	320/110-112.ccls. and (@ad<="20140708")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L40	1	(L38 L39) and (L37 L30)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:52 PM
L41	8	(L36) and (L37)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L42	8	(L36) and (L37)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L43	8	(L36) and (L30)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L44	8	L42 L43	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 03:56 PM
L45	0	L23 and L30	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23

							04:03 PM
L46	0	L23 and L29 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 04:04 PM
L47	0	L23 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 04:04 PM
L48	1	L30 and L26	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 04:04 PM
L49	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-5219034-$ or US-5281792-$ or US-5354215-$ or US-5367250-$ or US-5479160-$ or US-5515939-$ or US-5635804-$ or US-5635818-$).did. or (US-5687573-$ or US-5754031-$ or US-5780953-$ or US-5796255-$ or US-6036574-$ or US-6111393-$ or US-6130519-$ or US-6232728-$ or US-3590357-$ or US-3585358-$ or US-3654538-$ or US-3648146-$ or US-3783846-$ or US-4246559-$ or US-4251847-$ or US-4272142-$ or US-4274690-$ or US-4305004-$ or US-4309675-$ or US-4321542-$ or US-	USPAT	OR	ON	ON	2014/10/23 05:39 PM

		4323830-$ or US- 4327420-$ or US- 4327519-$ or US- 4346335-$ or US- 4346893-$ or US- 4349774-$ or US- 4359893-$).did. or (US- 4366430-$ or US- 4379989-$ or US- 4380718-$ or US- 4383213-$ or US- 4388618-$ or US- 4420212-$ or US- 4435660-$ or US- 4449089-$ or US- 4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US- 4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US- 4831321-$ or US- 4840583-$ or US- 4859987-$ or US- 4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US-					

		5245258-$ or US-H001236-$ or US-5253138-$ or US-5277285-$).did. or (US-5287085-$ or US-5306990-$ or US-5343128-$ or US-5343135-$ or US-5357186-$ or US-5430334-$ or US-5498933-$ or US-5502368-$ or US-5522582-$ or US-5546264-$ or US-5548462-$ or US-5555864-$ or US-5560442-$ or US-5565760-$ or US-5571999-$ or US-5593797-$ or US-5604653-$ or US-5626504-$ or US-5631544-$ or US-5635817-$ or US-5650242-$ or US-5652471-$ or US-5656922-$ or US-5691892-$ or US-5693995-$ or US-5701038-$ or US-5710471-$).did. or (US-5712549-$ or US-5712568-$ or US-5731669-$ or US-5747909-$ or US-5753989-$ or US-5767660-$ or US-5772468-$ or US-5777455-$ or US-5790037-$ or US-5795182-$ or US-5820407-$ or US-5847911-$ or US-5868076-$ or US-5892342-$ or US-5913911-$ or US-5921809-$).did.					
L50	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM
L51	24862	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM
L52	48	L50 and L51	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM

L53	1	L52 and L49	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 05:41 PM
L54	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:17 PM
L55	0	L54 with ((integrated embedded) adj plug)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:21 PM
L56	0	L54 and ((integrated embedded) adj plug)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:21 PM
L57	0	L54 and ((integrated embedded) adj (plug connect$3 socket$2))	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:23 PM
L58	83	L54 and (plug connect$3 socket$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:28 PM
L59	36	L54 and (plug)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:28 PM
L60	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L61	24862	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L62	48	L60 and L61	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L63	0	L59 and L62	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/23 11:29 PM
L64	225	(reverse reversed) adj polarity adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:19 PM
L65	0	(vehicle automobile car locomotive motorbike motorcycle) adj battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:21 PM
L66	95	battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:21 PM
L67	2960317	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:22 PM
L68	0	L64 and L66 and L67	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24

							11:22 PM
L69	3558	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:22 PM
L70	0	L64 and L66 and L69	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:22 PM
L71	0	L64 and L66	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:23 PM
L72	10	(US-20130314041-$ or US-20120091944-$ or US-20070285049-$ or US-20050252573-$ or US-20050040788-$).did. or (US-6130519-$ or US-8172603-$ or US-6262559-$ or US-5083076-$ or US-4885524-$).did.	US-PGPUB; USPAT	OR	ON	ON	2014/10/24 11:49 PM
L73	22	("5635817"|"8493021"|"7872361"|"20040130298"|"20100301800"|"5921809"|"6140796"|"6632103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:50 PM
L74	0	L72 and L73	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/10/24 11:50 PM
L75	4	("20050110467"|"6362599"|"6803743"|"7148580").PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/11/12 05:02 PM
L76	2	WO-2013137873-$.did.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2014/12/03 12:05 PM
L77	134	advantages near4 (lithium-ion) adj batter$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:03 PM
L78	196	320/105.ccls. and (@ad<="20140703")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L79	0	L77 and L78	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L80	3573	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03

							01:04 PM
L81	25112	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L82	167713	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L83	2991441	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L84	15	L80 and L81 and L82 and L83	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L85	0	L77 and L84	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:04 PM
L86	188	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L87	0	L77 and L86	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L88	224	((integrated combo combination assembly) adj jumper) and ((plug connector))	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L89	0	L77 and L88	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L90	25112	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L91	0	L77 and L90	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:05 PM
L92	1687265	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:06 PM
L93	53	L77 and L92	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:06 PM
L94	0	L93 and L90	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:07 PM
L95	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:07 PM
L96	0	L93 and L95	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:07 PM

L97	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-5219034-$ or US-5281792-$ or US-5354215-$ or US-5367250-$ or US-5479160-$ or US-5515939-$ or US-5635804-$ or US-5635818-$).did. or (US-5687573-$ or US-5754031-$ or US-5780953-$ or US-5796255-$ or US-6036574-$ or US-6111393-$ or US-6130519-$ or US-6232728-$ or US-3590357-$ or US-3585358-$ or US-3654538-$ or US-3648146-$ or US-3783846-$ or US-4246559-$ or US-4251847-$ or US-4272142-$ or US-4274690-$ or US-4305004-$ or US-4309675-$ or US-4321542-$ or US-4323830-$ or US-4327420-$ or US-4327519-$ or US-4346335-$ or US-4346893-$ or US-4349774-$ or US-4359893-$).did. or (US-4366430-$ or US-4379989-$ or US-4380718-$ or US-4383213-$ or US-	USPAT	OR	ON	ON	2014/12/03 01:08 PM

		4388618-$ or US- 4420212-$ or US- 4435660-$ or US- 4449089-$ or US- 4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US- 4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US- 4831321-$ or US- 4840583-$ or US- 4859987-$ or US- 4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5277285-$).did. or (US- 5287085-$ or US- 5306990-$ or US- 5343128-$ or US- 5343135-$ or US- 5357186-$ or US- 5430334-$ or US- 5498933-$ or US-					

		5502368-$ or US-5522582-$ or US-5546264-$ or US-5548462-$ or US-5555864-$ or US-5560442-$ or US-5565760-$ or US-5571999-$ or US-5593797-$ or US-5604653-$ or US-5626504-$ or US-5631544-$ or US-5635817-$ or US-5650242-$ or US-5652471-$ or US-5656922-$ or US-5691892-$ or US-5693995-$ or US-5701038-$ or US-5710471-$).did. or (US-5712549-$ or US-5712568-$ or US-5731669-$ or US-5747909-$ or US-5753989-$ or US-5767660-$ or US-5772468-$ or US-5777455-$ or US-5790037-$ or US-5795182-$ or US-5820407-$ or US-5847911-$ or US-5868076-$ or US-5892342-$ or US-5913911-$ or US-5921809-$).did.					
L98	0	L93 and L97	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:08 PM
L99	1856	320/110-112.ccls. and (@ad<="20140703")	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:08 PM
L100	0	L93 and L99	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:08 PM
L101	1	"20130241488"	US-PGPUB; USPAT; EPO	OR	ON	ON	2014/12/03 01:39 PM
L102	1	"20050110467"	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 11:35 AM
L103	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:06 PM

L104	3612	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L105	25490	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L106	169705	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L107	17	L104 and L105 and L106	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:07 PM
L108	4	L103 and L105 and L106	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:08 PM
L110	1	"6130519".pn.	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 02:32 PM
L121	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L122	25490	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L123	169705	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L124	4	L121 and L122 and L123	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L125	4	L124 and (@ad<="20140703")	US-PGPUB; USPAT; EPO	OR	ON	ON	2015/01/29 10:34 PM
L126	1	"9007015".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/23 12:22 PM
L127	2	"9506446".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/23 08:53 PM
L128	2	"20040130298"	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/23 09:12 PM
L129	1	"20050110467"	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 03:49 PM
L130	154	("5793185" "5752754" "4562893" "4793175" "4972135" "5886501" "5936317" "4521204" "4540376" "4554221" "4565538" "4573943" "4759728" "4798975"	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM

		"4878877" "4889516" "4969834" "5179494" "5219034" "5281792" "5354215" "5367250" "5479160" "5515939" "5635804" "5635818" "5687573" "5754031" "5780953" "5796255" "6036574" "6111393" "6130519" "6232728" "3590357" "3585358" "3654538" "3648146" "3783846" "4246559" "4251847" "4272142" "4274690" "4305004" "4309675" "4321542" "4323830" "4327420" "4327519" "4346335" "4346893" "4349774" "4359893" "4366430" "4379989" "4380718" "4383213" "4388618" "4420212" "4435660" "4449089" "4459536" "4461958" "4463402" "4479083" "4482830" "4488147" "4491110" "4497306" "4503378" "4508516" "4511831" "4511825" "4516648" "4537174" "4550280" "4575670" "4584513" "4615958" "4616166" "4631455" "4760000" "4764852" "4769586" "4799135" "4820966" "4829223" "4831321" "4840583" "4859987" "4868409" "4871957" "4871959" "4884464" "4885524" "4892204" "4913981" "4923415" "4924176" "4975089" "5012689" RE34159 "5241242" "5245258" H001236 "5253138" "5277285" "5287085" "5306990" "5343128" "5343135" "5357186" "5430334" "5498933" "5502368" "5522582" "5546264" "5548462" "5555864" "5560442" "5565760" "5571999" "5593797" "5604653" "5626504" "5631544" "5635817" "5650242"					

		"5652471" "5656922" "5691892" "5693995" "5701038" "5710471" "5712549" "5712568" "5731669" "5747909" "5753989" "5767660" "5772468" "5777455" "5790037" "5795182" "5820407" "5847911" "5868076" "5892342" "5913911" "5921809").pn.					
L131	4480	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L132	35042	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L133	62	L131 and L132	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L134	1	L130 AND L133	US-PGPUB; USPAT; EPO	OR	ON	ON	2018/04/24 06:18 PM
L135	73	((batter$3 adj presence)) adj (sens$3 detect$4)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:16 PM
L136	259	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:16 PM
L137	0	L135 and L136	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:16 PM
L138	35	(positive negative) near vehicle near connect$2	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 07:18 PM
L139	73	((batter$3 adj presence)) adj (sens$3 detect$4)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:13 PM
L140	35	(positive negative) near vehicle near connect$2	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:13 PM
L141	0	L139 and L140	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:13 PM
L142	302	((integrated combo combination assembly) adj jumper) and ((plug connector))	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:24 PM
L143	0	L139 and L142	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:24 PM

L144	37280	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:25 PM
L145	7	L139 and L144	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:25 PM
L146	4703	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L147	37280	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L148	67	L146 and L147	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L149	0	L145 and L148	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:26 PM
L150	130	battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:29 PM
L151	7	L145 and L150	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 09:29 PM
L152	2	"20040130298"	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/01/05 11:34 PM
L153	14677	(B60L53/14 or H02J7/0047 or H02J7/0054 or H02J7/0029 or H02J7/0034 or H02J2007/0062 or H02J2007/005 or H02J2001/006).cpc.	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/07/25 02:58 PM
L157	1	"9007015".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 11:00 AM
L158	1	"9770992".PN.	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 12:07 PM
L159	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-4413234-$ or US-4546265-$ or US-5193212-$ or US-	USPAT	OR	ON	ON	2019/10/07 01:22 PM

		5194799-$ or US- 5245304-$ or US- 5309031-$ or US- 5685630-$ or US- 5778026-$ or US- 5789099-$ or US- 5811913-$ or US- 5850134-$ or US- 4270834-$ or US- 4270827-$ or US- 4274043-$ or US- 4303962-$ or US- 4305550-$ or US- 4314193-$ or US- 4320333-$).did. or (US- 4354725-$ or US- 4374347-$ or US- 4373763-$ or US- 4373762-$ or US- 4377317-$ or US- 4384240-$ or US- 4409538-$ or US- 4467263-$ or US- 4470654-$ or US- 4496204-$ or US- 4516066-$ or US- 4527223-$ or US- 4552542-$ or US- 4555656-$ or US- 4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US-					

		5539610-$ or US- 5587916-$ or US- 5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US- 5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US- 6091906-$ or US- 6131065-$ or US- 6174618-$ or US- 4245308-$ or US- 4246635-$ or US- 4246544-$ or US- 4247813-$ or US- 4247753-$ or US- 4258292-$ or US- 4259631-$ or US- 4262278-$ or US- 4271092-$ or US- 4275385-$).did. or (US- 4276236-$ or US- 4281368-$ or US- 4290060-$ or US- 4292840-$ or US- 4307437-$ or US- 4306374-$ or US- 4314194-$ or US- 4316097-$ or US- 4321523-$ or US- 4321646-$ or US- 4322484-$ or US- 4323837-$ or US- 4326161-$ or US- 4330686-$ or US- 4332003-$ or US- 4335375-$ or US- 4335481-$ or US- 4339677-$ or US-					

		4345154-$ or US-4355263-$ or US-4355422-$ or US-4356442-$ or US-4360789-$ or US-4361730-$ or US-4368507-$ or US-4382221-$ or US-4392185-$).did. or (US-4395774-$ or US-4399201-$ or US-4401856-$ or US-4410835-$ or US-4414298-$ or US-4413364-$ or US-4415272-$ or US-4415843-$ or US-4417240-$ or US-4416550-$ or US-4424854-$ or US-4430396-$ or US-4432938-$ or US-4435742-$ or US-4435486-$ or US-4445358-$).did.					
L160	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-4413234-$ or US-4546265-$ or US-5193212-$ or US-5194799-$ or US-5245304-$ or US-5309031-$ or US-5685630-$ or US-5778026-$ or US-5789099-$ or US-5811913-$ or US-5850134-$ or US-4270834-$ or US-4270827-$ or US-4274043-$ or US-4303962-$ or US-4305550-$ or US-4314193-$ or US-4320333-$).did. or (US-4354725-$ or US-4374347-$ or US-4373763-$ or US-4373762-$ or US-4377317-$ or US-	USPAT	OR	ON	ON	2019/10/07 01:22 PM

		4384240-$ or US- 4409538-$ or US- 4467263-$ or US- 4470654-$ or US- 4496204-$ or US- 4516066-$ or US- 4527223-$ or US- 4552542-$ or US- 4555656-$ or US- 4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US- 5539610-$ or US- 5587916-$ or US- 5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US-					

		5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US- 6091906-$ or US- 6131065-$ or US- 6174618-$ or US- 4245308-$ or US- 4246635-$ or US- 4246544-$ or US- 4247813-$ or US- 4247753-$ or US- 4258292-$ or US- 4259631-$ or US- 4262278-$ or US- 4271092-$ or US- 4275385-$).did. or (US- 4276236-$ or US- 4281368-$ or US- 4290060-$ or US- 4292840-$ or US- 4307437-$ or US- 4306374-$ or US- 4314194-$ or US- 4316097-$ or US- 4321523-$ or US- 4321646-$ or US- 4322484-$ or US- 4323837-$ or US- 4326161-$ or US- 4330686-$ or US- 4332003-$ or US- 4335375-$ or US- 4335481-$ or US- 4339677-$ or US- 4345154-$ or US- 4355263-$ or US- 4355422-$ or US- 4356442-$ or US- 4360789-$ or US- 4361730-$ or US- 4368507-$ or US- 4382221-$ or US- 4392185-$).did. or (US- 4395774-$ or US- 4399201-$ or US- 4401856-$ or US- 4410835-$ or US- 4414298-$ or US- 4413364-$ or US- 4415272-$ or US- 4415843-$ or US- 4417240-$ or US- 4416550-$ or US- 4424854-$ or US-					

		4430396-$ or US-4432938-$ or US-4435742-$ or US-4435486-$ or US-4445358-$).did.					
L161	4959	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:28 PM
L162	39692	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:28 PM
L163	70	L161 and L162	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:28 PM
L164	13669	320/105.ccls. (H02J7/0054 or H02J7/0034 or H02J7/0029 or H02J7/0047 or H02J2001/006 or H02J2007/005 or H02J2007/0062 or H02J7/0063 or H02J1/06 or H02J2007/004 or H02J2007/0037).cpc.	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:31 PM
L165	331	(reverse reversed) adj polarity adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:32 PM
L166	135	battery adj (presence connection) adj (sens$3 detect$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:32 PM
L167	0	L165 and L166	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:32 PM
L168	0	L163 and (L165 L166) and L160	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:34 PM
L169	10	L163 and (L165 L166) and L164	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:34 PM
L170	4639064	(microcontroller microcomputer microprocessor processor controller)	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:35 PM
L171	10	L169 and L170	US-PGPUB; USPAT; EPO	OR	ON	ON	2019/10/07 01:35 PM
L172	38	((("THE") near3 ("NOCO") near3 ("COMPANY"))).AS,AAN	USPAT	OR	ON	ON	2019/10/07 01:48 PM

		M.					
L173	87	((("NOOK") near3 ("Jonathan")) OR (("NOOK") near3 ("William")) OR (("STANFIELD") near3 ("James")) OR (("UNDERHILL") near3 ("Derek"))).INV.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	ON	2019/10/07 01:48 PM
L174	64	("20020041174"|"20040066168"|"20040130298"|"20050040788"|"20050110467"|"20050252573"|"20070285049"|"20100301800"|"20110068734"|"20120091944"|"20130154543"|"20130314041"|"20140159509"|"20150306964"|"20160001666"|"3933140"|"4041445"|"4885524"|"4910628"|"4931731"|"5083076"|"5111130"|"5189359"|"5486434"|"5635817"|"5635818"|"5793185"|"5795182"|"5921809"|"5965998"|"6054779"|"6130519"|"6140796"|"6147471"|"6212054"|"6262492"|"6262559"|"6362599"|"6386907"|"6426606"|"6632103"|"6648701"|"6756764"|"6803743"|"6822425"|"7148580"|"7301303"|"7749031"|"7872361"|"8076900"|"8172603"|"8199024"|"8376775"|"8493021"|"9506446"|"9770992"|"D625265"|"D649116"|"D689020"|"D726109"|"D726114"|"D726121"|"D735665"|"D746774").PN.	US-PGPUB; USPAT	OR	ON	ON	2020/03/02 07:34 PM
L175	474	reverse near (polarity voltage) near detect$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:29 PM
L176	20	battery near isolat$3 near (sensor detector)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:29 PM
L177	0	L175 and L176	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:31 PM
L178	8	(L175 L176) and L174	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/03/02 08:32 PM
L179	2	("20180345803").PN.	US-PGPUB; USPAT;	OR	ON	ON	2020/03/03

			USOCR; DERWENT				02:58 PM
L180	13	("10328808"|"10604024"|"20050110467"|"20070278990"|"20180111491"|"20180215274"|"20180269703"|"20180342891"|"20180345803"|"20190308518"|"5953681"|"9007015"|"9770992").PN.	US-PGPUB; USPAT	OR	ON	ON	2020/07/13 10:55 PM
L181	1	"9007015".PN.	US-PGPUB; USPAT	OR	ON	ON	2020/07/14 01:25 PM
L182	3	"20130154543"	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 01:04 PM
L183	3	"9954391".pn.	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:39 PM
L184	240	output near port same (receptacle same plug)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:42 PM
L185	5219	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:43 PM
L186	0	L184 and L185	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:43 PM
L187	42234	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L188	248140	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L189	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L190	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L191	11	L187 and L188 and L189 and L190 and L185	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 02:44 PM
L192	240	(output near port) same (receptacle same plug)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:45 PM
L193	1949	(output near port) and (receptacle same plug)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:45 PM
L194	0	L191 and (L192 L193)	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 02:45 PM
L195	5219	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16

							04:00 PM
L196	42234	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L197	248140	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L198	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L199	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L200	11	L196 and L197 and L198 and L199 and L195	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:00 PM
L201	2	"20040130298"	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/07/16 04:35 PM
L202	2	("20180264959").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	ON	ON	2020/07/16 11:46 PM
L203	1	"20090174362"	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 07:14 PM
L204	25362	(B60L53/14 or H02J7/342 or H02J7/0047 or H02J7/0034 or H02J7/0029 or H02J1/122 or H02J7/00 or H02J7/0048 or H02J2310/46).cpc. 320/105.ccls.	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:21 PM
L205	5229	jump adj start$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L206	42408	(internal adj power adj (supply source)) (internal adj PS)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L207	249036	output adj port	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L208	2450598	(isolat$3 (batter$3 adj presence) adj sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L209	10231	(isolat$3 (batter$3 adj presence)) adj sens$3	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L210	295	reverse adj polarity adj (detect$3 sens$3)	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM

L211	11	L204 and L205 and L206 and L207 and (L208 L209) and L210	US-PGPUB; USPAT; EPO	OR	ON	ON	2020/08/07 08:22 PM
L212	149	(US-6014030-$ or US-4306374-$ or US-4559478-$ or US-4771451-$ or US-5378549-$ or US-5745587-$ or US-6229381-$ or US-6232752-$ or US-4297531-$ or US-4356442-$ or US-4370526-$ or US-4386818-$ or US-4426678-$ or US-4459536-$ or US-4855662-$ or US-4872199-$ or US-4927722-$ or US-4935959-$ or US-4994727-$ or US-5349285-$ or US-5367250-$ or US-5371455-$ or US-5376476-$ or US-5408223-$ or US-5410237-$ or US-5425004-$).did. or (US-5560442-$ or US-5571999-$ or US-5739711-$ or US-6016044-$ or US-6042961-$ or US-6147471-$ or US-6211642-$ or US-3783846-$ or US-4253056-$ or US-4262353-$ or US-4272142-$ or US-4291106-$ or US-4301407-$ or US-4314009-$ or US-4315973-$ or US-4321542-$ or US-4322143-$ or US-4333721-$ or US-4343982-$ or US-4346893-$ or US-4349774-$ or US-4361795-$ or US-4379267-$ or US-4380718-$ or US-4397184-$ or US-4399499-$ or US-4399818-$).did. or (US-	USPAT	OR	ON	ON	2020/08/07 08:24 PM

		4409304-$ or US- 4413248-$ or US- 4413220-$ or US- 4424264-$ or US- 4424812-$ or US- 4431868-$ or US- 4463402-$ or US- 4473756-$ or US- 4474537-$ or US- 4479083-$ or US- 4480018-$ or US- 4484145-$ or US- 4485271-$ or US- 4488147-$ or US- 4488110-$ or US- 4489341-$ or US- 4502211-$ or US- 4504556-$ or US- 4507856-$ or US- 4525438-$ or US- 4527111-$ or US- 4528255-$ or US- 4528424-$ or US- 4537174-$ or US- 4550280-$ or US- 4551670-$ or US- 4562128-$).did. or (US- 4564728-$ or US- 4579790-$ or US- 4581549-$ or US- 4588860-$ or US- 4592087-$ or US- 4592360-$ or US- 4602850-$ or US- 4625174-$ or US- 4631455-$ or US- 4757250-$ or US- 4770613-$ or US- 4774952-$ or US- 4774993-$ or US- 4782242-$ or US- 4798975-$ or US- 4803472-$ or US- 4809322-$ or US- 4818340-$ or US- 4819116-$ or US- 4841203-$ or US- 4871959-$ or US- 4892204-$ or US- 4903318-$ or US- 4907261-$ or US- 4923415-$ or US- 4974588-$ or US- 4990836-$).did. or (US- 4998141-$ or US- 5006427-$ or US- 5007436-$ or US-					

		5010307-$ or US-5020517-$ or US-5023493-$ or US-5189359-$ or US-5191507-$ or US-5193107-$ or US-5197085-$ or US-5198702-$ or US-5224476-$ or US-5229220-$ or US-5230637-$ or US-5230967-$ or US-5240655-$ or US-5245258-$ or US-H001236-$ or US-5253138-$ or US-5254081-$ or US-5280459-$ or US-5281491-$ or US-5296314-$ or US-5319300-$ or US-5325835-$ or US-5329588-$ or US-5344725-$).did. or (US-5347440-$ or US-5370665-$ or US-5384211-$ or US-5385512-$ or US-5404859-$ or US-5419745-$ or US-5425348-$ or US-5453643-$ or US-5453715-$ or US-5463380-$ or US-5481185-$ or US-5498984-$ or US-5508122-$ or US-5534368-$ or US-5539820-$).did.					
L213	0	L205 L206 (L208 or L209) L210 L212	US-PGPUB; USPAT; EPO	AND	ON	ON	2020/08/07 08:24 PM
L214	3	"20160359375"	US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2021/02/03 06:42 PM
L215	12	battery WITH (jump ADJ start$3 NEAR (device apparatus)) SAME (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2)))	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/04 10:11 AM

L216	0	battery WITH (jump ADJ start$3 NEAR (device apparatus)) WITH (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) SAME (USB NEAR (cable connect$2))	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/04 11:36 AM
L217	20	battery WITH (jump ADJ start$3 NEAR (device apparatus)) AND (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) AND (USB NEAR (cable connect$2))	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/04 11:37 AM
L218	2	"20090174362"	US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2021/02/04 06:50 PM
L219	10	"9506446".pn.	US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2021/02/04 07:34 PM
L220	20	(jump ADJ start$3 NEAR (device apparatus)) AND (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) AND (USB NEAR (cable connect$2)) AND ((boost up DC/DC DC-DC DC-to-DC) NEAR convert$2)	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/05 08:48 AM
L221	2	"9506446".pn.	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/05 10:46 AM
L222	1568	((DC-DC DC-to-DC boost DC/DC up) NEAR convert$2) WITH (resist$2 voltage) NEAR divi$4	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/05 11:39 AM
L223	161	(boost jump) NEAR start$3 NEAR (device apparatus)	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/05 11:40 AM
L224	0	L223 L222	US-PGPUB; USPAT; EPO	AND	ON	ON	2021/02/05 11:40 AM

L225	1962	((DC-DC DC-to-DC boost DC/DC up) NEAR convert$2) WITH (resist$2 voltage) NEAR divi$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2021/02/05 11:41 AM
L226	355	(boost jump) NEAR start$3 NEAR (device apparatus)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2021/02/05 11:41 AM
L227	0	L226 L225	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	ON	2021/02/05 11:42 AM
L228	315	L226 L185	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	ON	2021/02/05 11:43 AM
L229	54	(B60L53/14 OR H02J7/0047 OR H02J7/0054 OR H02J7/0029 OR H02J7/0034 OR H02J2007/0062 OR H02J2007/005 OR H02J2001/006).cpc. AND L228	US-PGPUB; USPAT; EPO	OR	ON	ON	2021/02/05 11:44 AM
L230	474	(usb (universal NEAR serial NEAR bus)) WITH ((resist$2 voltage) NEAR divi$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2021/02/05 12:03 PM
L231	1456	(usb (universal NEAR serial NEAR bus)) SAME ((resist$2 voltage) NEAR divi$4)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	ON	2021/02/05 12:03 PM
L232	15	L231 L230 L226	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	ON	2021/02/05 12:04 PM
L233	474	L231 L230	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	ON	2021/02/05 12:05 PM
L234	15	L185 L233	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	ON	2021/02/05 12:05 PM
L235	35	L233 L121	US-PGPUB; USPAT;	AND	ON	ON	2021/02/05

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB				12:06 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N111	0	(jump and vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:50 PM
N112	0	(vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:50 PM
N113	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:50 PM
N114	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and switch and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:51 PM
N115	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:51 PM

N116	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and input and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:52 PM
N117	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$2).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:52 PM
N118	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:52 PM
N119	0	(power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:53 PM
N120	0	(power and supply and output$2 and isolation and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2015/01/29 04:53 PM
N154	4	(supply and output$2 and isolat$3 and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2019/07/25 05:23 PM
N155	4	(supply and output$4 and isolat$3 and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	US-PGPUB; USPAT	OR	OFF	OFF	2019/07/25 05:23 PM
N156	4	N154 and N155	US-PGPUB; USPAT	OR	OFF	OFF	2019/07/25 05:24 PM

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/450,422	Filing Date 06/24/2019	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	05/10/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 45	Minus	** 46	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	*** 4	= 0		x $240 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DORIAN EVANS/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
054985-000055-US-05	16/450,422	June 24, 2019

First Named Inventor:	Title:
NOOK	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:
    - Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
    - The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
        - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
        - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
            - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
            - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date
/William L. Klima/	May 10, 2021
Name (Print/Typed) William L. Klima	Practitioner Registration No. 32422

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

☑ * Total of 1 forms are submitted.

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Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	42686509
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Lisa Elliott
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985-000055-US-05
Receipt Date:	10-MAY-2021
Filing Date:	24-JUN-2019
Time Stamp:	21:10:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response After Final Action	RFOA.pdf	248540 d79809d945dbaf7afb7ebb1963aea27ceca55a5e	no	29

Warnings:

Information:					
2	After Final Consideration Program Request	AFCPP.pdf	248846 65841bed268811018c1afa5e3e6af91ba3a2196a	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	497386	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Jonathan Lewis NOOK et al.
Appl. No.: 16/450,422
Filing Date: June 24, 2019
Exam: DIAO, M BAYE
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 Final Office Action dated February 10, 2021, along with a Request for Participation in the After-Final Consideration Pilot Program, making a response due on or before May 10, 2021. Accordingly, this paper is timely filed.

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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 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, the USB input charge circuit configured for converting power from a USB charger to charge voltage and current

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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.

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.

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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. (Currently Amended) 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 [[the]] a microcontroller.

8. (Currently Amended) 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 [[the]] 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)

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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.

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19. (Previously Presented) 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 when the vehicle battery isolation sensor is unable to detect presence of a 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.

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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 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 the power switch,

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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.

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

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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.

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.

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.

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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. (Previously Presented) 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.

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37. (Previously Presented) 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 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 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 positive and negative battery 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 polarity of the depleted or discharged battery when connected between the positive and negative battery terminal connectors;

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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.

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

40. (Currently Amended) The apparatus according to claim 39, 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. (Currently Amended) 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.

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43. (Currently Amended) 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. (Currently Amended) 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. (Currently Amended) 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.

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

51. (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 and determining whether the depleted or discharged battery is connected to the positive and negative polarity battery terminal connectors with proper polarity.

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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 24-28 have previously been cancelled without prejudice or disclaimer of the subject matter contained therein. Claim 11 is now cancelled without prejudice or disclaimer of the subject matter contained therein.

Claims 1, 7, 8, 29-31, 38-40, 42, 44, and 45 have been amended. 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.

SUMMARY

The claims have been amended above to more clearly set forth the claimed subject matter, and the features have been more clearly labelled according to the original specification.

The pending claims pending prior to the final Office Action were focused on the

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USB input, for example, comprising the USB input charging circuit and the USB input connector. The prior claim language clearly states and indicates the prior focus on the USB input.

Importantly, all of the prior art cited in the rejections do not disclose a jump starting apparatus comprising a USB input let alone a USB input charging circuit and a USB input connector. Specifically, the prior art cited in the rejections disclose only USB outputs, and do not teach or suggest a USB input for charging the internal power supply of the jump starting apparatus, let alone the claimed subject matter.

I. Objection to the claims, page 2, Claims 1, 7, 8, and 31

Examiner objects to the claims, particularly claims 1, 7, 8, and 31.

Please find amendments to the claims filed herein.

In view of the foregoing, it is submitted that claims are no longer objectionable. Accordingly, reconsideration and withdrawal of this objection is respectfully requested.

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II. Rejection under 35 USC § 112(b) (indefinite), page 3, Claims 1-23, 39-51

The Examiner asserts that claims 1-23 and 39-51 are indefinite.

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

Please find amendments to the claims filed herein.

In view of the foregoing, it is submitted that claims 1-23 and 39-51 are clear within the meaning of 35 USC § 112(b). Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

III. Rejection under 35 USC § 103, beginning at page 4

Claims 1-3, 5, 7-10, 12-15, 17-21, 23, 31-41, 43, and 46-51 are 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).

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 incorporated the teaching of Xinfang into the apparatus of Richardson so at to provide additional convenience to users of using another commonly used power input for charging the jump starter device.

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.

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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 fails to disclose a USB input for charging the internal power source of the jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Xinfang discloses a charging port 34, which is connectable to an external charging circuit adapter 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 52-58).

It is noted that the USB interfaces 38, 40 (FIG. 3) mentioned in the first paragraph of page 7 of the Office Action, are output ports for charging external devices, and not for charging the internal battery 42 (FIG. 3A) of the jump starter.

Further, the charging port 34 of ***Xinfang*** is not a USB connector, but instead is a conventional cylindrical-shaped (e.g. barrel type) electrical connector. Further, the charging circuit is located in an external adapter located outside and separate from the

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mobile power bank, and is not part of the mobile power bank unlike the claimed subject matter.

Like ***Richardson***, ***Xinfang*** fails to disclose a USB input for charging the internal power source of the jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Cleary, both ***Richardson*** and ***Xinfang*** do not disclose features #1 and #2 above. Thus, it is factually impossible for ***Richardson*** and ***Xinfang*** to teach or suggest the claimed invention. Thus, the rejection has not set forth a prima facie case of obviousness.

In view of the foregoing, it is submitted that nothing in ***Richardson*** and ***Xinfang***, 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.

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IV. Rejection under 35 USC § 103, beginning at page14

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 in further view of Richardet Jr. USPAT 8,172,603 (Exhibit 1014 IPR2020-00944).

The Examiner asserts that "it would have been obvious to one having 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 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.

Appropriate legal precedent is discussed above and is incorporated herein in its entirety by reference.

Richardson and ***Xinfang*** have been discussed above, which discussions are incorporated herein in their entirety. As discussed above, ***Richardson*** and ***Xinfang***, taken alone or together, fail to teach or suggest all of the limitations of the claims as required by *In re Vaeck*, because none of the foregoing references, taken alone or together, teach or suggest a USB input for charging the internal power supply of the jump starting device, let alone the claimed subject matter, including:

#1) 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

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#2) 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.

Richardet Jr. is cited in the rejection only for the purpose of disclosing ring terminals.

Richardet Jr. does not cure the deficiencies of ***Richardson*** and ***Xinfang***, because ***Richardet Jr.*** does not disclose a USB input for charging the internal power supply of the jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Cleary, ***Richardson***, ***Xinfang, and Richardet, Jr.*** do not disclose features #1 and #2 above. Thus, it is factually impossible for ***Richardson***, ***Xinfang, and Richardet, Jr.*** to teach or suggest the claimed invention. Thus, the rejection has not set forth a prima facie case of obviousness.

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang***, 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.

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V. 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) 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 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)**.

Richardson and ***Xinfang*** have been discussed above, which discussions are incorporated herein in their entirety. As discussed above, ***Richardson*** and ***Xinfang***, taken alone or together, fail to teach or suggest all of the limitations of the claims as required by *In re Vaeck*, because none of the foregoing references, taken alone or together, teach or suggest a USB input for charging the internal power supply of the jump starting device, let alone the claimed subject matter, including:

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#1) 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

#2) 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.

Krieger is cited in the rejection only for the purpose of disclosing a power switch comprises one or more FETs.

Krieger fails to disclose a USB input for charging the internal power supply of the jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Cleary, ***Richardson***, ***Xinfang, and Krieger*** do not disclose features #1 and #2 above. Thus, it is factually impossible for ***Richardson***, ***Xinfang, and Krieger*** to teach or suggest the claimed invention. Thus, the rejection has not set forth a prima facie case of obviousness.

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang***, and ***Krieger***, taken alone or together, renders the presently claimed subject matter obvious

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within the meaning of 35 USC § 103. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

VI. 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 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 Wnzong into the apparatus of Richardson as modified by Xinfang 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)**.

Richardson and ***Xinfang*** have been discussed above, which discussions are incorporated herein in their entirety. As discussed above, ***Richardson*** and ***Xinfang***, taken alone or together, fail to teach or suggest all of the limitations of the claims as

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required by *In re Vaeck*, because none of the foregoing references, taken alone or together, teach or suggest a USB input for charging the internal power supply of the jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Wanzong is cited in the rejection only for the purpose of disclosing a signle power diode.

Wanzong fails to disclose a USB input for charging the internal power supply of the jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Cleary, ***Richardson***, ***Xinfang, and Wanzong*** do not disclose features #1 and #2 above. Thus, it is factually impossible for ***Richardson***, ***Xinfang, and Wanzong*** to teach or suggest the claimed invention. Thus, the rejection has not set forth a prima facie case

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of obviousness.

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang***, 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.

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

b. Claim 11 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) in further view of Inskeep US 2014/0159509.

Claim 11 has been cancelled without prejudice or disclaimer, thus rendering this rejection moot as to this claim.

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

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 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 have incorporated LEDs providing output light of different colors of Baxter in the Richardson apparatus as modified by Xinfang 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**

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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)**.

Richardson and ***Xinfang*** have been discussed above, which discussions are incorporated herein in their entirety. As discussed above, ***Richardson*** and ***Xinfang***, taken alone or together, fail to teach or suggest all of the limitations of the claims as required by *In re Vaeck*, because none of the foregoing references, taken alone or together, teach or suggest a USB input for charging the internal power supply of the jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Baxter is cited in the rejection only for the purpose of disclosing a plurality of LEDs providing output light of different colors to indicate a variety of conditions in the battery charger.

Baxter fails to disclose a USB input for charging the internal power supply of the

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jump starting device, let alone the claimed subject matter, including:

#1) 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

#2) 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.

Cleary, ***Richardson***, ***Xinfang, and Baxter*** do not disclose features #1 and #2 above. Thus, it is factually impossible for ***Richardson***, ***Xinfang, and Baxter*** to teach or suggest the claimed invention. Thus, the rejection has not set forth a prima facie case of obviousness.

In view of the foregoing, it is submitted that nothing in ***Richardson***, ***Xinfang, 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.

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.

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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.

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,

VORYS, SATER, SEYMOUR and PEASE LLP

/William L. Klima/
William L. Klima, Registration No.: 32422
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Date: May 10, 2021

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

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Vorys, Sater, Seymour and Pease LLP
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EXAMINER
DIAO, M BAYE

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
06/03/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patlaw@vorys.com

Advisory Action Before the Filing of an Appeal Brief	Application No. 16/450,422	Applicant(s) Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	AIA (FITF) Status Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 10 May 2021 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☑ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☑ The period for reply expires 3 months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection.The current period for reply expires ____ months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.
   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANTS FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37CFR 41.37(a).

AMENDMENTS

3. ☑ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☑ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: See Continuation Sheet (See 37CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicants reply has overcome the following rejection(s): _____
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☑ For purposes of appeal, the proposed amendment(s):(a) ☐ will not be entered, or (b) ☑ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☑ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☑ Other: PTO-892; A.NE of 05/10/2021;PTOL-413 OR 413B interview form, and PTO-2323 form, and PE2E Search Notes.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed:_____.
    Claim(s) objected to:_____.
    Claim(s) rejected:1-23 and 29-51.
    Claim(s) withdrawn from consideration:_____.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	05/27/2021

Continuation of 3. NOTE: The A.NE AFCP filed on 5/10/2021 has been acknowledged. However, the review of the proposed amendment would take longer than the allotted non-production time, therefore the response is treated according to pre-pilot practice. The added limitations of, "a USB input charge circuit" and that of, "a USB input connector" require further search and consideration. Examiner found **US 2011/01755461 to Tinaphong** that teaches the added limitations but would take longer than the 3 hours allotted time to write the office action.

Continuation of REQUEST FOR RECONSIDERATION/OTHER 12. The request for reconsideration has been considered but does NOT place the application in condition for allowance because: the claims as currently amended would have been rejected as being obvious over Richardson in view of Xinfang (previously cited) and in further view o**f US 2011/01755461 to Tinaphong.**
Regarding claims 1,29-30, and 38, the combination of Richardson and Xinfang does not expressly teach: **"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".
However,Tinaphong discloses at least a USB input charge circuit **(input of element 24)** connected to the power supply **(18),** the USB input charge circuit**(20)** configured for converting**(element 20 is a first DC-DC converter)** power from a USB charger (24) to charge voltage and current for charging the power supply **(18)(See Figs. 2-3 and paragraph [0041])**; and a USB input connector **(30) configured for connection to the USB charger** (24)(note-The output of the first stage DC-to-DC converter circuit 20 is provided to the input of a second stage DC-to-DC converter circuit 22; see paragraph **[0038]**) and providing charge input from the USB charger**(24)** through the USB input connector to the USB input charge circuit**(see paragraphs [0037],[0039],[0073]-[0075], and [0080]).**

Richardson,Xinfang and Tinaphong are jump start devices analogous art**(Tinaphong; paragraph [0054]).** 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 as modified by Xinfang 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 conne ction 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 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]).**

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Examiner-Initiated Interview Summary	**Application No.** 16/450,422	**Applicant(s)** Nook et al.		
	Examiner M'BAYE DIAO	**Art Unit** 2859	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
M'BAYE DIAO	Primary Examiner	Telephonic
William L. Klima Reg. No. 32,422	Attorney	

Date of Interview: 28 May 2021.

Issues Discussed:

35 U.S.C. 103

Applicant's representative and Examiner discussed the new amendments to the independent claims on May 26, 2021. Examiner conveyed his finding of a new art to Tinaphong US 2011/0175461. However, it will take longer than the 3 hours window allotted for the AFCP 2.0 pilot program to write the office action and as a result, the A.NE of 05/10/2021 will be treated under the pre-pilot practice. No agreement was made.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	05/27/2021

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Notice of References Cited	Application/Control No. 16/450,422	Applicant(s)/Patent Under Reexamination Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20110175461-A1	07-2011	Tinaphong; Prapan Paul	H02J50/402	307/149
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

AFCP 2.0 Decision	Application No.	Applicant(s)	
	16/450,422	Nook et al.	
	Examiner	Art Unit	AIA (FITF) Status
	M'BAYE DIAO	2859	Yes

This is in response to the After Final Consideration Pilot request filed 10 May 2021.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ The request is not the first proper AFCP 2.0 request submitted in response to the most recent final rejection.

   ☐ Other: _____

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☑ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action . See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other: _____

   Examiner Note: Please attach an interview summary when necessary as described above.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:42 PM
L2	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:43 PM
L3	166340	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:43 PM
L4	0	vehicle adj batter$3 adj isolat$3 adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:44 PM
L5	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:47 PM
L6	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:48 PM
L7	0	reverse adj popularity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:49 PM
L8	186	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:49 PM
L9	0	(microcontroller microcomputer microprocessor processor controller) and L1 and L2 and L3 and L6 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L10	2960317	(microcontroller microcomputer microprocessor processor controller)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L11	0	L1 and L2 and L3 and L6 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L12	0	L1 and L2 and L3 and L6	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L13	0	L1 and L2 and L3 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L14	15	L1 and L2 and L3 and L10	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L15	3	L6 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:52 PM
L16	195	320/105.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:55 PM
L17	1845	320/110-112.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:55 PM
L18	0	(L16 L17) and (L14 L15)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:56 PM
L19	22	("5635817"|"8493021"|"7872361"|"20040130298"|"20100301800"|"5921809"|"6140796"|"6632	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:57 PM

		103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.					
L20	0	((integrated combo) adj jumper) with ((plug connector) same (other another) adj end$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:48 PM
L21	0	((integrated combo combination assembly) adj jumper) with ((plug connector) same (other another) adj end$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:48 PM
L22	0	((integrated combo combination assembly) adj jumper) and ((plug connector) same (other another) adj end$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L23	222	((integrated combo combination assembly) adj jumper) and ((plug connector))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L24	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L25	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L26	186	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L27	3	L24 and L25 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L28	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:50 PM
L29	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:50 PM
L30	48	L28 and L29	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:50 PM
L31	0	L23 L24 L25 L26	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:50 PM
L32	0	L23 L24 L25	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:50 PM
L33	0	L23 L30	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:51 PM
L34	0	L23 L30	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:51 PM
L35	1	L26 L30	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:51 PM
L36	8	L24 L30	(US-PGPUB; USPAT;	AND	ON	ON	2014/10/23

			EPO)				03:51 PM
L37	12	L27 L35 L36	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L38	195	320/105.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L39	1845	320/110-112.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L40	1	(L38 L39) and (L37 L30)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L41	8	(L36) and (L37)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L42	8	(L36) and (L37)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L43	8	(L36) and (L30)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L44	8	L42 L43	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L45	0	L23 and L30	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:03 PM
L46	0	L23 and L29 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:04 PM
L47	0	L23 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:04 PM
L48	1	L30 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:04 PM
L49	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-5219034-$ or US-5281792-$ or US-5354215-$ or US-5367250-$ or US-5479160-$ or US-5515939-$ or US-5635804-$ or US-5635818-$).did. or (US-5687573-$ or US-5754031-$ or US-5780953-$ or US-	(USPAT)	OR	ON	ON	2014/10/23 05:39 PM

		5796255-$ or US- 6036574-$ or US- 6111393-$ or US- 6130519-$ or US- 6232728-$ or US- 3590357-$ or US- 3585358-$ or US- 3654538-$ or US- 3648146-$ or US- 3783846-$ or US- 4246559-$ or US- 4251847-$ or US- 4272142-$ or US- 4274690-$ or US- 4305004-$ or US- 4309675-$ or US- 4321542-$ or US- 4323830-$ or US- 4327420-$ or US- 4327519-$ or US- 4346335-$ or US- 4346893-$ or US- 4349774-$ or US- 4359893-$).did. or (US- 4366430-$ or US- 4379989-$ or US- 4380718-$ or US- 4383213-$ or US- 4388618-$ or US- 4420212-$ or US- 4435660-$ or US- 4449089-$ or US- 4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US- 4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US-				

		4831321-$ or US- 4840583-$ or US- 4859987-$ or US- 4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5277285-$).did. or (US- 5287085-$ or US- 5306990-$ or US- 5343128-$ or US- 5343135-$ or US- 5357186-$ or US- 5430334-$ or US- 5498933-$ or US- 5502368-$ or US- 5522582-$ or US- 5546264-$ or US- 5548462-$ or US- 5555864-$ or US- 5560442-$ or US- 5565760-$ or US- 5571999-$ or US- 5593797-$ or US- 5604653-$ or US- 5626504-$ or US- 5631544-$ or US- 5635817-$ or US- 5650242-$ or US- 5652471-$ or US- 5656922-$ or US- 5691892-$ or US- 5693995-$ or US- 5701038-$ or US- 5710471-$).did. or (US- 5712549-$ or US- 5712568-$ or US- 5731669-$ or US- 5747909-$ or US- 5753989-$ or US- 5767660-$ or US- 5772468-$ or US- 5777455-$ or US- 5790037-$ or US- 5795182-$ or US- 5820407-$ or US-				

		5847911-$ or US-5868076-$ or US-5892342-$ or US-5913911-$ or US-5921809-$).did.					
L50	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L51	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L52	48	L50 and L51	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L53	1	L52 and L49	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L54	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:17 PM
L55	0	L54 with ((integrated embedded) adj plug)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:21 PM
L56	0	L54 and ((integrated embedded) adj plug)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:21 PM
L57	0	L54 and ((integrated embedded) adj (plug connect$3 socket$2))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:23 PM
L58	83	L54 and (plug connect$3 socket$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:28 PM
L59	36	L54 and (plug)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:28 PM
L60	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L61	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L62	48	L60 and L61	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L63	0	L59 and L62	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L64	225	(reverse reversed) adj polarity adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:19 PM
L65	0	(vehicle automobile car locomotive motorbike motorcycle) adj battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:21 PM
L66	95	battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:21 PM
L67	2960317	(microcontroller microcomputer microprocessor	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM

		processor controller)					
L68	0	L64 and L66 and L67	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM
L69	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM
L70	0	L64 and L66 and L69	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM
L71	0	L64 and L66	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:23 PM
L72	10	(US-20130314041-$ or US-20120091944-$ or US-20070285049-$ or US-20050252573-$ or US-20050040788-$).did. or (US-6130519-$ or US-8172603-$ or US-6262559-$ or US-5083076-$ or US-4885524-$).did.	(US-PGPUB; USPAT)	OR	ON	ON	2014/10/24 11:49 PM
L73	22	("5635817"|"8493021"|"7872361"|"20040130298"|"20100301800"|"5921809"|"6140796"|"6632103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:50 PM
L74	0	L72 and L73	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:50 PM
L75	4	("20050110467"|"6362599"|"6803743"|"7148580").PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/11/12 05:02 PM
L76	2	WO-2013137873-$.did.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2014/12/03 12:05 PM
L77	134	advantages near4 (lithium-ion) adj batter$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:03 PM
L78	196	320/105.ccls. and (@ad<="20140703")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L79	0	L77 and L78	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L80	3573	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L81	25112	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L82	167713	output adj port	(US-PGPUB; USPAT;	OR	ON	ON	2014/12/03

			EPO)				01:04 PM
L83	2991441	(microcontroller microcomputer microprocessor processor controller)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L84	15	L80 and L81 and L82 and L83	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L85	0	L77 and L84	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L86	188	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L87	0	L77 and L86	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L88	224	((integrated combo combination assembly) adj jumper) and ((plug connector))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L89	0	L77 and L88	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L90	25112	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L91	0	L77 and L90	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L92	1687265	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:06 PM
L93	53	L77 and L92	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:06 PM
L94	0	L93 and L90	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:07 PM
L95	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:07 PM
L96	0	L93 and L95	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:07 PM
L97	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-	(USPAT)	OR	ON	ON	2014/12/03 01:08 PM

		5219034-$ or US- 5281792-$ or US- 5354215-$ or US- 5367250-$ or US- 5479160-$ or US- 5515939-$ or US- 5635804-$ or US- 5635818-$).did. or (US- 5687573-$ or US- 5754031-$ or US- 5780953-$ or US- 5796255-$ or US- 6036574-$ or US- 6111393-$ or US- 6130519-$ or US- 6232728-$ or US- 3590357-$ or US- 3585358-$ or US- 3654538-$ or US- 3648146-$ or US- 3783846-$ or US- 4246559-$ or US- 4251847-$ or US- 4272142-$ or US- 4274690-$ or US- 4305004-$ or US- 4309675-$ or US- 4321542-$ or US- 4323830-$ or US- 4327420-$ or US- 4327519-$ or US- 4346335-$ or US- 4346893-$ or US- 4349774-$ or US- 4359893-$).did. or (US- 4366430-$ or US- 4379989-$ or US- 4380718-$ or US- 4383213-$ or US- 4388618-$ or US- 4420212-$ or US- 4435660-$ or US- 4449089-$ or US- 4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US-				

		4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US- 4831321-$ or US- 4840583-$ or US- 4859987-$ or US- 4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5277285-$).did. or (US- 5287085-$ or US- 5306990-$ or US- 5343128-$ or US- 5343135-$ or US- 5357186-$ or US- 5430334-$ or US- 5498933-$ or US- 5502368-$ or US- 5522582-$ or US- 5546264-$ or US- 5548462-$ or US- 5555864-$ or US- 5560442-$ or US- 5565760-$ or US- 5571999-$ or US- 5593797-$ or US- 5604653-$ or US- 5626504-$ or US- 5631544-$ or US- 5635817-$ or US- 5650242-$ or US- 5652471-$ or US- 5656922-$ or US- 5691892-$ or US- 5693995-$ or US- 5701038-$ or US- 5710471-$).did. or (US-					

		5712549-$ or US-5712568-$ or US-5731669-$ or US-5747909-$ or US-5753989-$ or US-5767660-$ or US-5772468-$ or US-5777455-$ or US-5790037-$ or US-5795182-$ or US-5820407-$ or US-5847911-$ or US-5868076-$ or US-5892342-$ or US-5913911-$ or US-5921809-$).did.					
L98	0	L93 and L97	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:08 PM
L99	1856	320/110-112.ccls. and (@ad<="20140703")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:08 PM
L100	0	L93 and L99	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:08 PM
L101	1	"20130241488"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:39 PM
L102	1	"20050110467"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 11:35 AM
L103	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:06 PM
L104	3612	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L105	25490	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L106	169705	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L107	17	L104 and L105 and L106	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L108	4	L103 and L105 and L106	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:08 PM
L110	1	"6130519".pn.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:32 PM
L121	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L122	25490	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L123	169705	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM

L124	4	L121 and L122 and L123	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L125	4	L124 and (@ad<="20140703")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L126	1	"9007015".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/23 12:22 PM
L127	2	"9506446".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/23 08:53 PM
L128	2	"20040130298"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/23 09:12 PM
L129	1	"20050110467"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 03:49 PM
L130	154	("5793185" "5752754" "4562893" "4793175" "4972135" "5886501" "5936317" "4521204" "4540376" "4554221" "4565538" "4573943" "4759728" "4798975" "4878877" "4889516" "4969834" "5179494" "5219034" "5281792" "5354215" "5367250" "5479160" "5515939" "5635804" "5635818" "5687573" "5754031" "5780953" "5796255" "6036574" "6111393" "6130519" "6232728" "3590357" "3585358" "3654538" "3648146" "3783846" "4246559" "4251847" "4272142" "4274690" "4305004" "4309675" "4321542" "4323830" "4327420" "4327519" "4346335" "4346893" "4349774" "4359893" "4366430" "4379989" "4380718" "4383213" "4388618" "4420212" "4435660" "4449089" "4459536" "4461958" "4463402" "4479083" "4482830" "4488147" "4491110" "4497306" "4503378" "4508516" "4511831" "4511825" "4516648" "4537174" "4550280" "4575670" "4584513" "4615958" "4616166" "4631455" "4760000" "4764852" "4769586" "4799135" "4820966" "4829223" "4831321"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM

		"4840583" "4859987" "4868409" "4871957" "4871959" "4884464" "4885524" "4892204" "4913981" "4923415" "4924176" "4975089" "5012689" RE34159 "5241242" "5245258" H001236 "5253138" "5277285" "5287085" "5306990" "5343128" "5343135" "5357186" "5430334" "5498933" "5502368" "5522582" "5546264" "5548462" "5555864" "5560442" "5565760" "5571999" "5593797" "5604653" "5626504" "5631544" "5635817" "5650242" "5652471" "5656922" "5691892" "5693995" "5701038" "5710471" "5712549" "5712568" "5731669" "5747909" "5753989" "5767660" "5772468" "5777455" "5790037" "5795182" "5820407" "5847911" "5868076" "5892342" "5913911" "5921809").pn.					
L131	4480	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L132	35042	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L133	62	L131 and L132	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L134	1	L130 AND L133	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L135	73	((batter$3 adj presence)) adj (sens$3 detect$4)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:16 PM
L136	259	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:16 PM
L137	0	L135 and L136	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:16 PM
L138	35	(positive negative) near vehicle near connect$2	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:18 PM
L139	73	((batter$3 adj presence)) adj (sens$3 detect$4)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:13 PM
L140	35	(positive negative) near vehicle near connect$2	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:13 PM

L141	0	L139 and L140	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:13 PM
L142	302	((integrated combo combination assembly) adj jumper) and ((plug connector))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:24 PM
L143	0	L139 and L142	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:24 PM
L144	37280	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:25 PM
L145	7	L139 and L144	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:25 PM
L146	4703	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L147	37280	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L148	67	L146 and L147	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L149	0	L145 and L148	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L150	130	battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:29 PM
L151	7	L145 and L150	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:29 PM
L152	2	"20040130298"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 11:34 PM
L153	14677	(B60L53/14 or H02J7/0047 or H02J7/0054 or H02J7/0029 or H02J7/0034 or H02J2007/0062 or H02J2007/005 or H02J2001/006).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/07/25 02:58 PM
L157	1	"9007015".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 11:00 AM
L158	1	"9770992".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 12:07 PM
L159	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-4413234-$ or US-4546265-$ or US-5193212-$ or US-5194799-$ or US-	(USPAT)	OR	ON	ON	2019/10/07 01:22 PM

		5245304-$ or US- 5309031-$ or US- 5685630-$ or US- 5778026-$ or US- 5789099-$ or US- 5811913-$ or US- 5850134-$ or US- 4270834-$ or US- 4270827-$ or US- 4274043-$ or US- 4303962-$ or US- 4305550-$ or US- 4314193-$ or US- 4320333-$).did. or (US- 4354725-$ or US- 4374347-$ or US- 4373763-$ or US- 4373762-$ or US- 4377317-$ or US- 4384240-$ or US- 4409538-$ or US- 4467263-$ or US- 4470654-$ or US- 4496204-$ or US- 4516066-$ or US- 4527223-$ or US- 4552542-$ or US- 4555656-$ or US- 4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US- 5539610-$ or US- 5587916-$ or US-					

		5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US- 5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US- 6091906-$ or US- 6131065-$ or US- 6174618-$ or US- 4245308-$ or US- 4246635-$ or US- 4246544-$ or US- 4247813-$ or US- 4247753-$ or US- 4258292-$ or US- 4259631-$ or US- 4262278-$ or US- 4271092-$ or US- 4275385-$).did. or (US- 4276236-$ or US- 4281368-$ or US- 4290060-$ or US- 4292840-$ or US- 4307437-$ or US- 4306374-$ or US- 4314194-$ or US- 4316097-$ or US- 4321523-$ or US- 4321646-$ or US- 4322484-$ or US- 4323837-$ or US- 4326161-$ or US- 4330686-$ or US- 4332003-$ or US- 4335375-$ or US- 4335481-$ or US- 4339677-$ or US- 4345154-$ or US- 4355263-$ or US- 4355422-$ or US-				

		4356442-$ or US-4360789-$ or US-4361730-$ or US-4368507-$ or US-4382221-$ or US-4392185-$).did. or (US-4395774-$ or US-4399201-$ or US-4401856-$ or US-4410835-$ or US-4414298-$ or US-4413364-$ or US-4415272-$ or US-4415843-$ or US-4417240-$ or US-4416550-$ or US-4424854-$ or US-4430396-$ or US-4432938-$ or US-4435742-$ or US-4435486-$ or US-4445358-$).did.					
L160	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-4413234-$ or US-4546265-$ or US-5193212-$ or US-5194799-$ or US-5245304-$ or US-5309031-$ or US-5685630-$ or US-5778026-$ or US-5789099-$ or US-5811913-$ or US-5850134-$ or US-4270834-$ or US-4270827-$ or US-4274043-$ or US-4303962-$ or US-4305550-$ or US-4314193-$ or US-4320333-$).did. or (US-4354725-$ or US-4374347-$ or US-4373763-$ or US-4373762-$ or US-4377317-$ or US-4384240-$ or US-4409538-$ or US-4467263-$ or US-4470654-$ or US-4496204-$ or US-	(USPAT)	OR	ON	ON	2019/10/07 01:22 PM

		4516066-$ or US- 4527223-$ or US- 4552542-$ or US- 4555656-$ or US- 4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US- 5539610-$ or US- 5587916-$ or US- 5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US- 5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US-					

		6091906-$ or US-6131065-$ or US-6174618-$ or US-4245308-$ or US-4246635-$ or US-4246544-$ or US-4247813-$ or US-4247753-$ or US-4258292-$ or US-4259631-$ or US-4262278-$ or US-4271092-$ or US-4275385-$).did. or (US-4276236-$ or US-4281368-$ or US-4290060-$ or US-4292840-$ or US-4307437-$ or US-4306374-$ or US-4314194-$ or US-4316097-$ or US-4321523-$ or US-4321646-$ or US-4322484-$ or US-4323837-$ or US-4326161-$ or US-4330686-$ or US-4332003-$ or US-4335375-$ or US-4335481-$ or US-4339677-$ or US-4345154-$ or US-4355263-$ or US-4355422-$ or US-4356442-$ or US-4360789-$ or US-4361730-$ or US-4368507-$ or US-4382221-$ or US-4392185-$).did. or (US-4395774-$ or US-4399201-$ or US-4401856-$ or US-4410835-$ or US-4414298-$ or US-4413364-$ or US-4415272-$ or US-4415843-$ or US-4417240-$ or US-4416550-$ or US-4424854-$ or US-4430396-$ or US-4432938-$ or US-4435742-$ or US-4435486-$ or US-4445358-$).did.					
L161	4959	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:28 PM

L162	39692	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:28 PM
L163	70	L161 and L162	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:28 PM
L164	13669	320/105.ccls. (H02J7/0054 or H02J7/0034 or H02J7/0029 or H02J7/0047 or H02J2001/006 or H02J2007/005 or H02J2007/0062 or H02J7/0063 or H02J1/06 or H02J2007/004 or H02J2007/0037).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:31 PM
L165	331	(reverse reversed) adj polarity adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:32 PM
L166	135	battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:32 PM
L167	0	L165 and L166	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:32 PM
L168	0	L163 and (L165 L166) and L160	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:34 PM
L169	10	L163 and (L165 L166) and L164	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:34 PM
L170	4639064	(microcontroller microcomputer microprocessor processor controller)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:35 PM
L171	10	L169 and L170	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:35 PM
L172	38	((("THE") near3 ("NOCO") near3 ("COMPANY"))).AS,AANM.	(USPAT)	OR	ON	ON	2019/10/07 01:48 PM
L173	87	((("NOOK") near3 ("Jonathan")) OR (("NOOK") near3 ("William")) OR (("STANFIELD") near3 ("James")) OR (("UNDERHILL") near3 ("Derek"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/10/07 01:48 PM
L174	64	("20020041174"|"20040066168"|"20040130298"|"20050040788"|"20050110467"|"20050252573"|"20070285049"|"20100301800"|"20110068734"|"20120091944"|"20	(US-PGPUB; USPAT)	OR	ON	ON	2020/03/02 07:34 PM

		130154543"|"20130314041"|"20140159509"|"20150306964"|"20160001666"|"3933140"|"4041445"|"4885524"|"4910628"|"4931731"|"5083076"|"5111130"|"5189359"|"5486434"|"5635817"|"5635818"|"5793185"|"5795182"|"5921809"|"5965998"|"6054779"|"6130519"|"6140796"|"6147471"|"6212054"|"6262492"|"6262559"|"6362599"|"6386907"|"6426606"|"6632103"|"6648701"|"6756764"|"6803743"|"6822425"|"7148580"|"7301303"|"7749031"|"7872361"|"8076900"|"8172603"|"8199024"|"8376775"|"8493021"|"9506446"|"9770992"|"D625265"|"D649116"|"D689020"|"D726109"|"D726114"|"D726121"|"D735665"|"D746774").PN.					
L175	474	reverse near (polarity voltage) near detect$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:29 PM
L176	20	battery near isolat$3 near (sensor detector)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:29 PM
L177	0	L175 and L176	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:31 PM
L178	8	(L175 L176) and L174	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:32 PM
L179	2	("20180345803").PN.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/03/03 02:58 PM
L180	13	("10328808"|"10604024"|"20050110467"|"20070278990"|"20180111491"|"20180215274"|"20180269703"|"20180342891"|"20180345803"|"20190308518"|"5953681"|"9007015"|"9770992").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2020/07/13 10:55 PM
L181	1	"9007015".PN.	(US-PGPUB; USPAT)	OR	ON	ON	2020/07/14 01:25 PM
L182	3	"20130154543"	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 01:04 PM
L183	3	"9954391".pn.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:39 PM
L184	240	output near port same (receptacle same plug)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:42 PM

L185	5219	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:43 PM
L186	0	L184 and L185	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:43 PM
L187	42234	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L188	248140	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L189	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L190	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L191	11	L187 and L188 and L189 and L190 and L185	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L192	240	(output near port) same (receptacle same plug)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:45 PM
L193	1949	(output near port) and (receptacle same plug)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:45 PM
L194	0	L191 and (L192 L193)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:45 PM
L195	5219	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L196	42234	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L197	248140	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L198	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L199	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L200	11	L196 and L197 and L198 and L199 and L195	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L201	2	"20040130298"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:35 PM
L202	2	("20180264959").PN.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 11:46 PM
L203	1	"20090174362"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 07:14 PM
L204	25362	(B60L53/14 or H02J7/342 or H02J7/0047 or H02J7/0034 or H02J7/0029 or H02J1/122 or H02J7/00 or H02J7/0048 or H02J2310/46).cpc. 320/105.ccls.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:21 PM

L205	5229	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L206	42408	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L207	249036	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L208	2450598	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L209	10231	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L210	295	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L211	11	L204 and L205 and L206 and L207 and (L208 L209) and L210	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L212	149	(US-6014030-$ or US-4306374-$ or US-4559478-$ or US-4771451-$ or US-5378549-$ or US-5745587-$ or US-6229381-$ or US-6232752-$ or US-4297531-$ or US-4356442-$ or US-4370526-$ or US-4386818-$ or US-4426678-$ or US-4459536-$ or US-4855662-$ or US-4872199-$ or US-4927722-$ or US-4935959-$ or US-4994727-$ or US-5349285-$ or US-5367250-$ or US-5371455-$ or US-5376476-$ or US-5408223-$ or US-5410237-$ or US-5425004-$).did. or (US-5560442-$ or US-5571999-$ or US-5739711-$ or US-6016044-$ or US-6042961-$ or US-6147471-$ or US-6211642-$ or US-3783846-$ or US-4253056-$ or US-4262353-$ or US-4272142-$ or US-4291106-$ or US-4301407-$ or US-4314009-$ or US-	(USPAT)	OR	ON	ON	2020/08/07 08:24 PM

		4315973-$ or US- 4321542-$ or US- 4322143-$ or US- 4333721-$ or US- 4343982-$ or US- 4346893-$ or US- 4349774-$ or US- 4361795-$ or US- 4379267-$ or US- 4380718-$ or US- 4397184-$ or US- 4399499-$ or US- 4399818-$).did. or (US- 4409304-$ or US- 4413248-$ or US- 4413220-$ or US- 4424264-$ or US- 4424812-$ or US- 4431868-$ or US- 4463402-$ or US- 4473756-$ or US- 4474537-$ or US- 4479083-$ or US- 4480018-$ or US- 4484145-$ or US- 4485271-$ or US- 4488147-$ or US- 4488110-$ or US- 4489341-$ or US- 4502211-$ or US- 4504556-$ or US- 4507856-$ or US- 4525438-$ or US- 4527111-$ or US- 4528255-$ or US- 4528424-$ or US- 4537174-$ or US- 4550280-$ or US- 4551670-$ or US- 4562128-$).did. or (US- 4564728-$ or US- 4579790-$ or US- 4581549-$ or US- 4588860-$ or US- 4592087-$ or US- 4592360-$ or US- 4602850-$ or US- 4625174-$ or US- 4631455-$ or US- 4757250-$ or US- 4770613-$ or US- 4774952-$ or US- 4774993-$ or US- 4782242-$ or US- 4798975-$ or US- 4803472-$ or US- 4809322-$ or US- 4818340-$ or US-					

		4819116-$ or US-4841203-$ or US-4871959-$ or US-4892204-$ or US-4903318-$ or US-4907261-$ or US-4923415-$ or US-4974588-$ or US-4990836-$).did. or (US-4998141-$ or US-5006427-$ or US-5007436-$ or US-5010307-$ or US-5020517-$ or US-5023493-$ or US-5189359-$ or US-5191507-$ or US-5193107-$ or US-5197085-$ or US-5198702-$ or US-5224476-$ or US-5229220-$ or US-5230637-$ or US-5230967-$ or US-5240655-$ or US-5245258-$ or US-H001236-$ or US-5253138-$ or US-5254081-$ or US-5280459-$ or US-5281491-$ or US-5296314-$ or US-5319300-$ or US-5325835-$ or US-5329588-$ or US-5344725-$).did. or (US-5347440-$ or US-5370665-$ or US-5384211-$ or US-5385512-$ or US-5404859-$ or US-5419745-$ or US-5425348-$ or US-5453643-$ or US-5453715-$ or US-5463380-$ or US-5481185-$ or US-5498984-$ or US-5508122-$ or US-5534368-$ or US-5539820-$).did.					
L213	0	L205 L206 (L208 or L209) L210 L212	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2020/08/07 08:24 PM
L214	3	"20160359375"	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO;	OR	ON	ON	2021/02/03 06:42 PM

			DERWENT; IBM_TDB)				
L215	12	battery WITH (jump ADJ start$3 NEAR (device apparatus)) SAME (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2)))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/04 10:11 AM
L216	0	battery WITH (jump ADJ start$3 NEAR (device apparatus)) WITH (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) SAME (USB NEAR (cable connect$2))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/04 11:36 AM
L217	20	battery WITH (jump ADJ start$3 NEAR (device apparatus)) AND (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) AND (USB NEAR (cable connect$2))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/04 11:37 AM
L218	2	"20090174362"	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/04 06:50 PM
L219	10	"9506446".pn.	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/04 07:34 PM
L220	20	(jump ADJ start$3 NEAR (device apparatus)) AND (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) AND (USB NEAR (cable connect$2)) AND ((boost up DC/DC DC-DC DC-to-DC) NEAR convert$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 08:48 AM
L221	2	"9506446".pn.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 10:46 AM
L222	1568	((DC-DC DC-to-DC boost DC/DC up) NEAR convert$2) WITH (resist$2 voltage) NEAR divi$4	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 11:39 AM

L223	161	(boost jump) NEAR start$3 NEAR (device apparatus)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 11:40 AM
L224	0	L223 L222	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2021/02/05 11:40 AM
L225	1962	((DC-DC DC-to-DC boost DC/DC up) NEAR convert$2) WITH (resist$2 voltage) NEAR divi$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 11:41 AM
L226	355	(boost jump) NEAR start$3 NEAR (device apparatus)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 11:41 AM
L227	0	L226 L225	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 11:42 AM
L228	315	L226 L185	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 11:43 AM
L229	54	(B60L53/14 OR H02J7/0047 OR H02J7/0054 OR H02J7/0029 OR H02J7/0034 OR H02J2007/0062 OR H02J2007/005 OR H02J2001/006).cpc. AND L228	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 11:44 AM
L230	474	(usb (universal NEAR serial NEAR bus)) WITH ((resist$2 voltage) NEAR divi$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 12:03 PM
L231	1456	(usb (universal NEAR serial NEAR bus)) SAME ((resist$2 voltage) NEAR divi$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 12:03 PM
L232	15	L231 L230 L226	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:04 PM
L233	474	L231 L230	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:05 PM
L234	15	L185 L233	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:05 PM
L235	35	L233 L121	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	AND	ON	ON	2021/02/05 12:06 PM

			IBM_TDB)				
L236	9	"9506446".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:27 PM
L237	0	L2 WITH (USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:10 AM
L238	0	L2 AND (USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:47 AM
L239	10	"9506446".pn.	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:48 AM
L240	7	(USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 11:56 AM
L241	1641	(USB (universal NEAR serial NEAR bus)) NEAR input NEAR (connect$3 coupl$2 adapt$3 male female mater mating plug receptacle)	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 12:00 PM
L242	1	L241 L240	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/05/24 12:01 PM
L243	4	L60 L241	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/05/24 12:04 PM
L244	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) SAME L241 SAME ((usb (universal NEAR serial NEAR bus)) NEAR input NEAR connect$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:45 PM
L245	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) SAME L241 SAME ((usb (universal NEAR	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM

		serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2)					
L246	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) AND L241 AND ((usb (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM
L247	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) AND L241 AND ((usb (universal NEAR serial NEAR bus)) NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N111	0	(jump and vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:50 PM
N112	0	(vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:50 PM
N113	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:50 PM
N114	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:51 PM

		and switch and microcontrol$3 and input and signal$2).clm.					
N115	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:51 PM
N116	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:52 PM
N117	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:52 PM
N118	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:52 PM
N119	0	(power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:53 PM
N120	0	(power and supply and output$2 and isolation and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:53 PM
N154	4	(supply and output$2 and isolat$3 and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/07/25 05:23 PM
N155	4	(supply and output$4 and isolat$3 and sensor and revers$3 and	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/07/25 05:23 PM

		polarity and switch$3 and microcontrol$3 and signal$1).clm.					
N156	4	N154 and N155	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/07/25 05:24 PM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Jonathan Lewis NOOK et al.
Appl. No.: 16/450,422
Filing Date: June 24, 2019
Exam: DIAO, M BAYE
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 Final Office Action dated February 10, 2021, along with a Request for Participation in the After-Final Consideration Pilot Program, making a response due on or before May 10, 2021. Accordingly, this paper is timely filed.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16450422	Filing Date	2019-06-24	Docket Number (if applicable)	054985-000055-US-05	Art Unit	2859
First Named Inventor	NOOK			Examiner Name	DIAO		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☒ Other Response After Final Action filed May 10, 2021

☒ Enclosed

☐ Amendment/Reply

☐ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☒ Other Petition for an Extension of Time for one-month

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 220585

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Signature of Registered U.S. Patent Practitioner			
Signature	/William L. Klima/	Date (YYYY-MM-DD)	2021-06-10
Name	William L. Klima	Registration Number	32422

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PTO/AIA/22 (10-20)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 054985-000055-US-05

Application Number: 16/450,422

Filed: June 24, 2019

For: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

Art Unit: 2859

Examiner: DIAO

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☑ One month (37 CFR 1.17(a)(1))	$220	$110	$55	$ 110
☐ Two months (37 CFR 1.17(a)(2))	$640	$320	$160	$
☐ Three months (37 CFR 1.17(a)(3))	$1,480	$740	$370	$
☐ Four months (37 CFR 1.17(a)(4))	$2,320	$1,160	$580	$
☐ Five months (37 CFR 1.17(a)(5))	$3,160	$1,580	$790	$

☑ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.

☑ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 32422.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/William L. Klima/ — Signature

June 10, 2021 — Date

William L. Klima — Typed or printed name

202-467-8800 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

EXHIBIT 1002
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Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Patent Application Fee Transmittal

Application Number:	16450422
Filing Date:	24-Jun-2019
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Filer:	William Leonard Klima/Lisa Elliott
Attorney Docket Number:	054985-000055-US-05

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

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Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	2251	1	110	110
Miscellaneous:				
RCE- 1ST REQUEST	2801	1	680	680
		Total in USD ($)		**790**

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Electronic Acknowledgement Receipt

EFS ID:	42951888
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Lisa Elliott
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985-000055-US-05
Receipt Date:	10-JUN-2021
Filing Date:	24-JUN-2019
Time Stamp:	13:05:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$790
RAM confirmation Number	E202160D05140968
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	RCE__1x_small.pdf	1363929 6040ab6e937ea470937210717d9c4b20ec0dc9bc	no	3
Warnings:					
Information:					
2	Extension of Time	EOT__1x_small.pdf	194540 865b2446c18c4b631da540c66e98607dc9124614	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	32564 3e28884cb42081235697d1fc8a2a82e8a91119e2	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1591033		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

20230 7590 06/25/2021

Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
Washington, DC 20006-1152

EXAMINER
DIAO, M BAYE

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
06/25/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patlaw@vorys.com

Office Action Summary	Application No. 16/450,422	Applicant(s) Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 06/10/2021.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-10,12-23 and 29-51 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-10,12-23 and 29-51 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 06/24/2019 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/10/2021 has been entered.

3. Claims 1,7,8,29-31,38-40,42-45 are currently amended while claims 11 and 24-28 have been canceled. By this amendment, claims 1-10,12-23, and 29-51 are now pending in the application.

Claim Rejections - 35 USC § 103

4. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

5. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims the examiner presumes that the subject matter of the various claims was commonly owned as of the effective filing date of the claimed invention(s) absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and effective filing dates of each claim that was not commonly owned as of the effective filing date of the later invention in order for the examiner to consider the applicability of 35 U.S.C. 102(b)(2)(C) for any potential 35 U.S.C. 102(a)(2) prior art against the later invention.

8. **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.**

9. Regarding claims 1,29-30, and 38: Richardson discloses A jump starting apparatus**(10)(Abstract;¶[0001])** configured for boosting or charging a depleted or discharged battery**(battery of vehicle 28)(¶[0006])** having a positive polarity battery terminal**(Red clamp; Fig. 2.C)** and a negative polarity battery terminal**(black clamp)(Note-jumper cable 60 has red (positive) and black (negative) clamps. (EX1010 at ¶[0020]); Richardson discloses "a pair**

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Petitioner ADC (IPR2024-00577)

of conductive leads for connecting the supplemental power to an engine electrical system), the jump starting apparatus comprising: an internal power supply(**jump starter batteries 22 provide power to the battery of the vehicle(28) to be jump started; see ¶[0006] and Fig. 2C**); a positive polarity battery terminal connector(**labeled Red clamp; Fig. 2.C**) configured (**via cables 60**)for connecting the jump starting apparatus to the positive polarity battery terminal of the depleted or discharged battery(**battery of vehicle 28; see Fig. 2C**); a negative polarity battery terminal connector(**labeled black clamp; Fig. 2.C**) configured (**via cables 60**)for connecting the jump starting apparatus to the negative polarity battery terminal of the depleted or discharged battery(**battery of vehicle 28**)(**note- Richardson discloses that the jumper cables have a positive and negative polarity, see ¶[0012]) ("a reverse voltage sensor 24 monitors the polarity of the jumper cables on line 26")**; a power switch or circuit((**contact relay 34); see Figs. 1 and 2C**) configured to turn on **(or off)(as per claim 38**) power from the power supply(**jump starter batteries 22**) to the positive and negative polarity battery terminal connectors(**Red and Black clamps; see Fig. 2C**); a control system or circuit(**12**) connected to and controlling the power switch(**34**), the control system or circuit(**12**) configured to detect(**¶[0014] ("A reverse voltage LED 48 is illuminated when the microprocessor 12 determines that a reverse voltage jumper cable voltage is detected by reverse voltage sensor 24"). Importantly, the circuitry which forms reverse voltage sensor 24 is separate and distinct from the circuity forming vehicle voltage sensor 30. (see Fig. 2B). Furthermore, reverse voltage sensor 24 and vehicle voltage sensor 30 produce separate and distinct signals which are transmitted to microprocessor 12 on separate and distinct lines H and I respectively. (EX1010 at Fig.2B**) whether the positive and negative polarity battery terminal connectors have a proper connection with the positive and negative polarity battery terminals of

EXHIBIT 1002
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the depleted or discharged battery(**battery of vehicle 28; see Fig. 2C**) prior(**note- Only after the reverse polarity and battery presence tests have been conducted at steps 214 and 252 does the process proceed to step 268 where microprocessor 12 sends a signal to close contact relay 34. (See also Fig. 3, Fig. 6, ¶[0014] and [0027]**))to turning on the power switch or circuit(**34**)(**see ¶[0014]**)(**note- Richardson also makes clear that the microcontroller only closes relay 34 if the reverse polarity sensor 24 and vehicle voltage sensor 30 indicate the presence of a vehicle battery connected with proper polarity. For example, Richardson states that "when the jump starter 10 is initially powered on 200, the microprocessor initializes the hardware . . . . then performs a self-test operation 208 where . . . all sensors 20, 24, 30, 32, 38, 40 . . . are tested". Richardson further discloses The process of measuring the vehicle battery voltage necessarily entails detecting the presence of a vehicle battery connected to the positive and negative output ports since reading a sufficiently low voltage would indicate either the absence of a vehicle battery or a battery with a voltage below a required threshold for detection. Only after the reverse polarity and battery presence tests have been conducted at steps 214 and 252 does the process proceed to step 268 where microprocessor 12 sends a signal to close contact relay 34. (See also Fig. 3, Fig. 6, see also ¶[0014] and [0027]).**

10. Richardson does not teach the following limitations:

- 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 connector to the USB charge circuit

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Petitioner ADC (IPR2024-00577)

11. Xinfang is an analogous art and pertains to the same field of endeavor namely mini portable jump starter that can be carry in a pocket by a user**(Xinfang; col. 9, lines 1-8).** Xinfang discloses factual evidence of a USB charge circuit **(36,54)** connected to the power supply **(16),** the USB charge circuit configured for converting power from a USB charger**(36)** to charge voltage and current**(via constant current constant voltage output circuit 66)** for charging the power supply**(16)(note- 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)**.

12. It 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.

13. The combination of Richardson and Xinfang does not teach that the USB input charge circuit connected to the power supply and a USB connector configured for connecting to the USB charger and providing charge input from the USB charger, through the USB connector to the USB charge circuit.

14. However,Tinaphong discloses at least a USB input charge circuit **(input of first stage DC-DC-converter circuit 20)** connected to the power supply **(18),** the USB input charge circuit **(input of first stage DC-DC-converter circuit 20)** configured for converting**(via element 20 which is a first DC-DC converter)** power from a USB charger **(24)** to charge voltage and current for charging the power supply **(18)(See Figs. 2-3 and paragraph [0041])**; and a USB input connector **(30)** configured for connection to the USB charger **(24)(note-The output of the first stage DC-to-DC converter circuit 20 is provided to the input of a second stage DC-to-**

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DC converter circuit 22; see paragraph [0038]) and providing charge input from the USB charger**(24)** through the USB input connector**(30)** to the USB input charge circuit**(see paragraphs [0037],[0039],[0073]-[0075], and [0080]).** Richardson and Tinaphong are jump start devices analogous art**(Tinaphong; paragraph [0054]).** 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]).**

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15. Regarding claim 2, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further discloses, wherein the power supply comprises a lithium ion battery **(Col.1, lines 67- col. 2, line 1).** Tinaphong also discloses, wherein the power supply comprises a lithium ion battery **(lithium polymer battery (18); see Abstract, ¶[0012],[0035],[0039],[0040]).**

16. Regarding claim 3, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 2. Xinfang further discloses, wherein the lithium ion battery comprises a battery pack of multiple lithium ion batteries **(Xinfang further discloses the use of a battery cell (which can be lithium ion) comprised of four battery cells. (EX1008 at col.5, lines 9-11**).

17. Regarding claim 5, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the control system or circuit**(12)** is configured for detecting a presence**(via battery presence sensor or circuit 30)(note- vehicle voltage sensor 30 which consists of two resistors and a capacitor as shown in Fig. 2B below. Furthermore, these two resistors are connected to vehicle battery 28 via the line designated as Q which as shown in Fig. 2A connects directly to line A shown in Fig.2C and which provides an output signal via line I. These resistors are connected to vehicle battery 28 via the line designated as Q which as shown in Fig. 2A connects directly to line A shown in Fig. 2C and which provides an output signal via line I)** of the depleted or discharged battery connected between the positive and negative polarity battery terminal connectors**(note-Richardson discloses that voltage sensor 30 detects whether or not the jumper cables are connected to the vehicle battery. For example, Richardson states that "[i]f the system detects an increase in the difference between the**

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measured jump starter battery voltage 20 and the voltage measured 30 across the contact relay 34 indicating that one of the jumper cables has been disconnected 302 from the vehicle's battery system or starter system 28 then a jumper cable unplugged error count is incremented 304". (EX1010 at ¶[0033]) and detecting a proper polarity connection**(as detected by reverse voltage sensor 24)(note-reverse voltage sensor 24 monitors the polarity of the jumper cables on line 26 which are connected to the vehicle's electrical system 28." (EX1010, ¶[0012]; see also ¶[0020] ("once jumper cables 60 have been connected to the vehicle to be started 28, the voltage is measured by reverse voltage sensor 24 to determine if the cables have been properly connected to the vehicle 214")** of the positive and negative polarity terminals with the positive**(Red clamp)** and negative **(Black clamp)** polarity battery terminal connectors**("A reverse voltage LED 48 is illuminated when the microprocessor 12 determines that a reverse voltage jumper cable voltage is detected by reverse voltage sensor 24"). Importantly, the circuitry which forms reverse voltage sensor 24 is separate and distinct from the circuity forming vehicle voltage sensor 30. (see Fig. 2B). Furthermore, reverse voltage sensor 24 and vehicle voltage sensor 30 produce separate and distinct signals which are transmitted to microprocessor 12 on separate and distinct lines H and I respectively. (EX1010 at Fig.2B)**.

18. Regarding claim 7, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a temperature sensor**(38)(Fig. 1)(¶[0013]** configured to detect temperature of the power supply**(jump starter's batteries 22)** and to provide**(see signal output by 38 and fed into 12 in Fig. 1)** a temperature signal to a microcontroller**(12).**

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19. Regarding claim 8, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a voltage measurement circuit**(20)(see Fig. 1; ¶[0012])** configured to measure output voltage of the power supply**(jump starter batteries 22)** and to provide a voltage measurement signal**(output signal of 20 fed into 12)** to a microcontroller**(12)(see Fig. 1).**

20. Regarding claim 9, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus further comprising a voltage regulator**(Fig. 2A; regulator LM7805 is a 5V regulator although not labeled)** configured to convert output voltage of the power supply**(22)** to a voltage level appropriate to provide operating power to internal components of the jump starting apparatus.

21. Regarding claim 10, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further discloses, further comprising a USB output port**(38,40)** configured to provide charging power from the power supply**(16)** to a USB- chargeable device**(Xinfang; col. 4, lines 59- 62)**.

22. Regarding claim 12, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches factual evidence of a portable jump starter that utilizes a flashlight circuit configured to provide a source of light to a user. **(Xinfang col.1, lines 45-47 ("The present invention according to an embodiment provides a mobile power bank, vehicle ignition system jump starter, and a flashlight."), see also col. 4, lines 24-25 ("The second plate 24 may be provided with a**

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master control button 26 and a flashlight 28"). Xinfang also discloses the use of flashlight to provide a SOS signal in an emergency situation. **(Xinfang; col. 8, lines 37-44).**

23. Regarding claim 11, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Tinaphong discloses, further comprising a USB charging input port**(input of first stage DC-DC-converter circuit 20)** configured to provide charging power from an external power source**(external power adaptor)** to the internal power supply**(18).** Tinaphong discloses, the USB charging port comprising the USB connector**(24)**.

24. Accordingly claim 11 would have been obvious.

25. Accordingly claim 12 would have been obvious.

26. Regarding claim 13, modified Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 12. Richardson further discloses several illuminating means including at least one LED**(Richardson; ¶[0014]).**

27. Regarding claim 14, modified Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 13. Xinfang further discloses, wherein the control system or circuit is configured to control the at least one LED to provide a visual alarm indicating an emergency situation. Note-Xinfang discloses the use of a flashlight to provide a SOS signal in an emergency situation. **(Xinfang col.8, lines 37-44 ("After turning on the flashlight 28, if the control module 58 detects that the master control button 26 is activated, it may control the flashlight in multiple illumination modes, such as a constant light mode, flashing strobe light mode, and flashing S.O.S. (three sequential short flashes, followed by three sequential long flashes, followed again by three sequential short flashes) signal light mode").**

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28. Therefore it would have been obvious to one of ordinary skill in the art to combine the teachings of Xinfang with those of Richardson as modified by Tinaphong to include a LED flashlight and configure it to provide a visual alarm indicating an emergency situation so as to warn the user in an emergency situation.

29. Accordingly claim 14 would have been obvious.

30. Regarding claim 15, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses a plurality of visual indicators **(LED 54 and LCD 46)** configured to display user battery remaining capacity. For example, Richardson states: **"If the voltage level of the system batteries 22 measured by the voltage sensor 30 is equal to a state of charge of eighty percent or more below a fully charged voltage level 222, an error flag is set and the event recorded in memory 224. The charge battery LED 54 is illuminated and the LCD 46 displays a "Charge Battery" message 225." Ex. 1010, ¶[0021]. Thus, the two visual indicators (LED 54 and LCD 46) in Richardson display remaining capacity status of said internal power supply (a state of charge of eighty percent or more below a fully charged voltage level). Furthermore Richardson discloses "[a] "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210." Ex. 1010, ¶[0020]. Thus, the "Reverse Polarity" error message on the LCD 46 and illuminated LED 48 warn a user when a vehicle battery is connected with reverse polarity, prompting the user to correct the connection).** Xinfang also teaches, the apparatus including an operation indicator LED**(32)** to provide visual indication of the power supply capacity status**(Xinfang; col. 4, lines 45-51)**.

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31. Regarding claim 17, Richardson in view of Xinfang and Tinaphong teaches or discloses all the limitations of claim 1. Richardson further discloses, 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. **(note-"[a] "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity condition is corrected 220, at which point processing returns to the start of the main processing loop 210." Richardson, ¶([0014],[0020]). Thus, the "Reverse Polarity" error message on the LCD 46 and illuminated LED 48 warn a user when a vehicle battery is connected with reverse polarity, prompting the user to correct the connection).**

32. Regarding claim 18, Richardson in view of Xinfang and Tinaphong teaches or discloses all the limitations of claim 1. Richardson further discloses, the apparatus 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 **(note LCD display 46 allows a start message)the power on status) when the jump starter is powered on. Richardson further discloses "[r]eferring to FIGS. 2A, 2B, 2C, 2D and 3-8, when the jump starter 10 is initially powered on 200, the microcontroller 12 initializes the hardware, reads all system parameters and variables, and initializes the interrupt service routine 202 (See FIG. 8). All stored performance history is read from the onboard, non-volatile memory 204 and a start message is displayed 206 on the LCD display 46." Richardson, ¶0015. The start message displayed on the LCD display comprises a visual indicator configured to display the power on status of the apparatus. Additionally, Richardson discloses a separate visual indicator displaying the jump start boost power status of power supplied to the output**

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port. For example, Richardson states "[i]f the voltage level of the jump starter batteries 22 drop below a value of twenty percent of the normal level, a charge battery LED 54 is illuminated."(¶[0014],[0020]).

33. Accordingly, claim 18 would have been obvious.

34. Regarding claim 19, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as discussed and set forth above in claim 1. Richardson further discloses, the apparatus 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 when the vehicle battery isolation sensor is unable to detect presence of a vehicle battery(**note- the jump starter apparatus 10 also includes automatic (42) and manual (44) pushbutton inputs to accept user input to select either automatic or manual operation; see ¶[0013]-[0016];[0025]-[0026], and [0039]**).

35. Regarding claim 20, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as discussed and set forth above in claim 19. Richardson further discloses, wherein the control system or circuit**(12)** is configured to detect actuation of the manual override switch**(44)** for at least a predetermined period of time before activation of the manual override mode(**see ¶[0039],[0041]-[0042]**).

36. Regarding claim 21, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, the apparatus further comprising a jumper cable device**(60) (via red and black clamps see Fig. 2C**) but does not teach the jumper cable device including a plug configured to plug into said output port, a pair of cables integrated with the plug at one respective end thereof and being configured to be connected to terminals of a battery at another respective end thereof. Xinfang further

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discloses a jumper cable with a plug at one end and a pair of cables at the other end configured to be connected to terminals of a battery. (Xinfang; col. 2, lines 40-43 ("Optionally, the apparatus further comprises a vehicle ignition cable having a first end coupleable to the ignition output port and a second end coupleable to terminals of a vehicle battery").

37. Accordingly claim 21 would have been obvious.

38. Regarding claim 23, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as discussed and set forth above in claim 21. Xinfang further discloses, wherein the output and the plug are dimensioned so that the plug will fit into the output port**(46)** only in one specific orientation**(Xinfang; Fig. 2)**.

39. Regarding claim 31, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the power switch control system or circuit**(12)** does not switch on the power supply to connect the power supply**(22)** to the depleted or discharged battery**(battery of vehicle 28 that is to be jump started)** when the power switch control system or circuit**(12)** detects either that (i) the depleted or discharged battery is absent**(as detected by vehicle battery presence detector 30)** 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**(as determined by reverse polarity detection sensor 24)(see also ¶[0014] and [0027]**).

40. Regarding claim 32, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 30. Richardson further discloses, wherein the power switch control system or circuit**(12)** is configured to detect presence **(via signal output by voltage sensor 30 and input into control system or circuit 12)** of the

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depleted or discharged battery**(battery of vehicle 28)** when connected between the positive and negative battery connectors**(red and black clamps)** and to detect polarity**(via signal output by reverse polarity sensor 24 into control system or circuit 12)** 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**(see ¶[0012],[0014]**).

41. Regarding claim 33, Richardson discloses in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 30. Richardson further discloses, wherein the power switch control system or circuit comprises a microcontroller**(system microcontroller 12; Fig. 1)** configured for providing an output**(58)** controlling the power switch**(contact relay 34)(note-A contact relay control output 58 operates the contact relay 34. When the jump starter operation has been successfully initiated, the contact relay 34 is closed and the jump starter batteries 22 are connected to the starter system or batteries of the vehicle to be started 28. The contact relay 34 is opened when a successful start cycle has been completed; see¶[0014]**).

42. Regarding claim 34, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 33. Richardson further discloses, wherein the microcontroller**(12)** receives input**(14)(see ¶[0011]**)from one or more sensors**(20,24,30,32,38,40)** configured to detect presence**(via vehicle presence detector sensor 30)(see ¶[0012])** of the depleted or discharged battery**(battery of vehicle 28)** when connected between the positive and negative battery connectors**(black and red clamps)** and to detect polarity**(via sensor 24)** of the depleted or discharged battery when connected between the positive and negative battery connectors.

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43. Regarding claim 35, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 34. Richardson further discloses, wherein the one or more sensors includes one sensor**(30)** 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**(24)** of the depleted or discharged battery when connected between the positive and negative battery connectors**(red and black clamps of cables 60)(see Figs. 2A-2D).**

44. Regarding claim 36, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 35. Richardson further discloses, wherein the one or more sensors comprises one or more sensing circuits**(20,24,30,32,38,40)(see ¶[0011] and see Figs. 2A-2C for the different sensor circuits 20, ,24, 30, 32, 38,and 40**).

45. Regarding claim 37, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 33. Richardson further discloses, wherein the microcontroller**(12)** is configured to turn on the power switch**(34)** to provide power from the power supply**(jump starter batteries)(22)** to the depleted or discharged battery**(battery of vehicle 28)** only when the depleted or discharged battery is determined by the microcontroller**(12)** to be present and connected to the jump starting apparatus **(10)**with the proper polarity**(see¶[0012],[0014])(Note- Richardson discloses that the power switch is turned on to cause the internal power supply to be connected to the output port in response to signals from the sensors indicating (1) the presence of a vehicle battery at said output port and (2) proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs. Richardson also discloses or teaches that the power switch is not turned on when signals from the sensors indicate either**

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the absence of a vehicle battery at the output port or improper polarity connection of positive and negative terminals of the vehicle battery with the positive and negative polarity outputs. Richardson discloses in FIGS. 3-8 "flow charts of the processing steps of the portable power source of the present invention." Ex. 1006, ¶0010. This sequence of processing steps involves several checks performed by the microcontroller before turning on the power switch to jump start the vehicle. As discussed below, these checks include detecting (1) the presence of a vehicle battery at said output port and (2) proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs. 77. Richardson discloses that the reverse voltage sensor 24 detects whether jumper cables that have been manually connected to the vehicle battery have been properly connected or if there is a reverse connection. Richardson discloses or teaches that the power switch for charging the vehicle battery cannot be turned on unless there is a proper connection of the cables. For example, referring to FIG. 3 (a portion of which is reproduced below), Richardson states: If the system does not detect a battery charging voltage 212, once jumper cables 60 have been manually connected to the vehicle to be started 28, the voltage is measured by the reverse voltage sensor 24 to determine if the cables have been properly connected to the vehicle 214. If the voltage measured is significantly less than the voltage of the jump starter capacitors 21 and batteries 22, then a reverse polarity connection of the jumper cables to the vehicle is determined and an error flag is set and the event saved in nonvolatile memory 216. A "Reverse Polarity" error message is displayed 218 on the LCD 46, and the reverse voltage LED 48 is illuminated 216. Any further jump starter action by the operator is ignored until the reverse polarity

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condition is corrected 220, at which point processing returns to the start of the main processing loop 210. Ex. 1010, ¶[0020]).

46. Regarding claim 39, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further discloses, the apparatus further comprising a DC-DC converter**(included in battery circuit board 44)(note- The battery circuit board 44 may be provided with voltage boosting circuitry to step up the output voltage from the battery cell 42 to the ignition output port 46 to provide an output voltage higher than about 13.6V; see col. 5, lines 29-40 and Fig. 2**) connected to the USB charge circuit**(36)**.

47. Regarding claim 40, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 39. Xinfang further discloses, wherein the DC-DC converter is configured for up-converting the input voltage received by the USB connector**(38,40) (included in battery circuit board 44)(note- The battery circuit board 44 may be provided with voltage boosting circuitry to step up the output voltage from the battery cell 42 to the ignition output port 46 to provide an output voltage higher than about 13.6V; see col. 5, lines 29-40 and Fig. 2**).

48. Regarding claim 41, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 40. Xinfang further discloses, wherein the input voltage is 5V**(inherent for a standard USB connector)** that is up-converted to 13.6 VDC for charging the power supply. Richardson in view of Xinfang differs from the claimed invention in that the input voltage is up-converted to 12.4V instead of 13.6V. It would have been an obvious matter of design choice to configure the output of the voltage boosting circuit of Xinfang to up-convert the 5V input of the USB connector to 12.4V as recited since

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such modification is an obvious matter of design choice to meet load power requirements. Furthermore, when a device or technology is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or in a different one, so that if a person of ordinary skill can implement a predictable variation, the variation is likely obvious.

49. Regarding claim 43, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches, the apparatus further comprising a USB output circuit**(36)** connected to the power supply**(16)** to provide a USB output for charging portable electronic devices from the power supply**(16)** **(Xinfang; col. 4, lines 42-58)(note-Xinfang discloses that the USB output module 36 is connectable via a USB cable to support USB charging of electronic devices where the battery module 16 provides power to the electronic devices; see col. 4, lines 59-62).** Tinaphong discloses a USB output connector**(24)** connected to the USB output circuit**(30)(see Tinaphong; Fig. 2 and ¶[0073],[0075]).**

50. Regarding claim 46, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches, the apparatus including an operation indicator LED**(32)** to provide visual indication of the power supply capacity status**(Xinfang; col. 4, lines 45-51)**.

51. Regarding claim 47, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Xinfang further teaches, the apparatus including an operation indicator LED**(32)** to provide visual indication of the switch activation status indicating power is being provided to the depleted or discharged battery**(16)** **(Xinfang; col. 4, lines 45-51)**.

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52. Regarding claim 48, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the proper connection with the positive and negative polarity battery terminals of the depleted or discharged battery prior to turning on the power switch or circuit is a proper polarity connection(**see Ex. 1010, ¶[0020] and see¶[0012],[0014]; note- Richardson discloses or teaches that the power switch for charging the vehicle battery cannot be turned on unless there is a proper connection of the cables).**

53. Regarding claim 49, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the control system or circuit comprises one or more sensors(**battery presence sensor 30; reverse polarity sensor 24; 20,32,38, and 40**) connected to a microprocessor(**12**) for determining whether the depleted or discharged battery(**battery of vehicle 28**) is present and connected between the positive and negative polarity battery terminal connectors(**see Richardson ¶[0010]-[0015] and [0027])¶[0015]**).

54. Regarding claim 50, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses, wherein the control system or circuit comprises one or more sensors(**battery presence sensor 30; reverse polarity sensor 24; 20,32,38, and 40**) connected to a microprocessor(**12**) for determining whether the depleted or discharged battery(**battery of vehicle 28**) is connected to the positive and negative polarity battery terminal connectors with proper polarity(**see also ¶[0010]-[0015] and [0027]).**

55. Regarding claim 51, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1. Richardson further discloses,

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wherein the control system or circuit comprises one or more sensors**(battery presence sensor 30; reverse polarity sensor 24; 20,32,38, and 40)** connected to a microprocessor for determining whether the depleted or discharged battery**(battery of vehicle 28)** is present and connected between the positive and negative polarity battery terminal connectors and determining whether the depleted or discharged battery is connected to the positive and negative polarity battery terminal connectors with proper polarity**(see also ¶[0010]-[0015] and [0027]).**

56. **Claim 4 is rejected under 35 U.S.C. 103 as being unpatentable over by 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.**

57. Regarding claim 4, Richardson discloses all the claimed invention as set forth and discussed above in claim 1. However, Richardson fails to expressly disclose the limitations of, wherein the power switch comprises one or more FETs.

58. Krieger is an analogous art and pertains to the same field of endeavor, namely battery jump starters for vehicle engines and discloses factual evidence of, wherein the power switch comprises one or more FETs**(12a-12d)(see Krieger; ¶[0030] and Fig. 5).**

59. It would have been obvious to one having 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.

60. Accordingly claim 4 would have been obvious.

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61. **Claims 6 is rejected under 35 U.S.C. 103 as being unpatentable over by 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).**

62. Regarding claim 6, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 1 but fails to expressly teach the limitations of, the apparatus 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.

63. Wanzong is an analogous art**(abstract)** and discloses factual evidence of a battery maintainer and charger apparatus for battery vehicles**(col. 2, lines 59-67)**. Wanzong discloses an "isolation diode 160," which acts as the power diodes to prevent back-charging of said internal power supply from an electrical system connected to said output port. As shown in **Fig. 1** of the reference**(see Fig. 1 of Wanzong),** the isolation sensor **160** is between the output port **(output terminals 170 and 180)** of the charger apparatus and the internal power supply **(transformer 20/ full wave bridge rectifier 30/main capacitor 40**). While Wanzong discloses a single power diode**(160),** it would have been obvious to one having 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.

64. Accordingly claim 6 would have been obvious.

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65. **Claim 16 is rejected under 35 U.S.C. 103 as being unpatentable over by 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 Applicants).**

66. Regarding claim 16, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 15. However, the combination of Richardson, Xinfang and Tinaphong does not expressly teach, "wherein said plurality of visual indicators comprises a plurality of LEDs providing output light of different colors."

67. Baxter discloses a plurality of LEDs providing output light of different colors to indicate a variety of conditions. For example, Baxter states: For example, if proper connection conditions are detected and it is determined that it is safe to make a connection, the logic circuit or microcontroller 26 can activate a green LED as a signal of proper connection prior to or concurrent with making an electrical connection between the two low- voltage circuits connected to the input terminals 20 and the output terminals 22. Alternatively, a red LED might be activated if an improper connection is detected, along with activation of the alarm 30. Different signals **(via the alarm 30 and/or the optical signal 32 or optical signals 32)** may be used to indicate different detected conditions **(e.g. reversed polarity, no connection, short circuit, etc.). (Baxter col. 10, lines 24-31 and col. 12, lines 18-29)**.

68. Therefore, Baxter utilizes a plurality of LEDs providing output light of different colors to indicate a variety of conditions in the battery charger. It 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

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internal power supply, since using different lights of different colors enables a user to be readily notified of particular conditions very clearly and easily.

69. Accordingly claim 16 would have been obvious.

70. **Claim 22 is rejected under 35 U.S.C. 103 as being unpatentable over by 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).**

71. Regarding claim 22, Richardson in view of Xinfang and Tinaphong discloses all the claimed invention as set forth and discussed above in claim 21. However the combination of Richardson, Xinfang, and Tinaphong fails to expressly teach, the limitations of, "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".

72. Richardet discloses "means to provide a battery terminal connection which provides secure and stable connection to a motor vehicle battery or the like adaptable to a variety of common scenarios and which is simple and quick for an average user." **(Richardet; col. 1, lines 60-65).**

73. Richardet further discloses and shows in **Fig. 2A,** discloses a pair of ring terminals **(23)** to connect a pair of cables **(24, 25)** with battery terminals **(120)** and **(130) (Richardet; col. 4, lines 57-65**).

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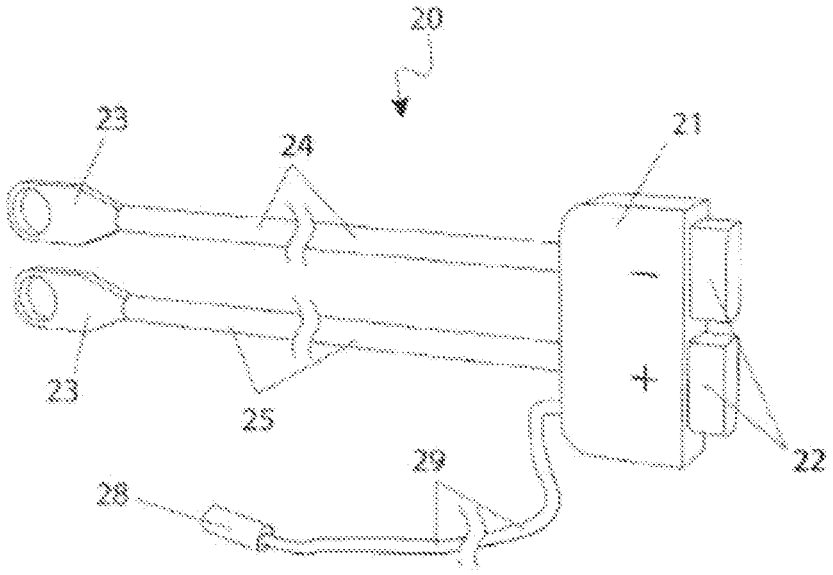


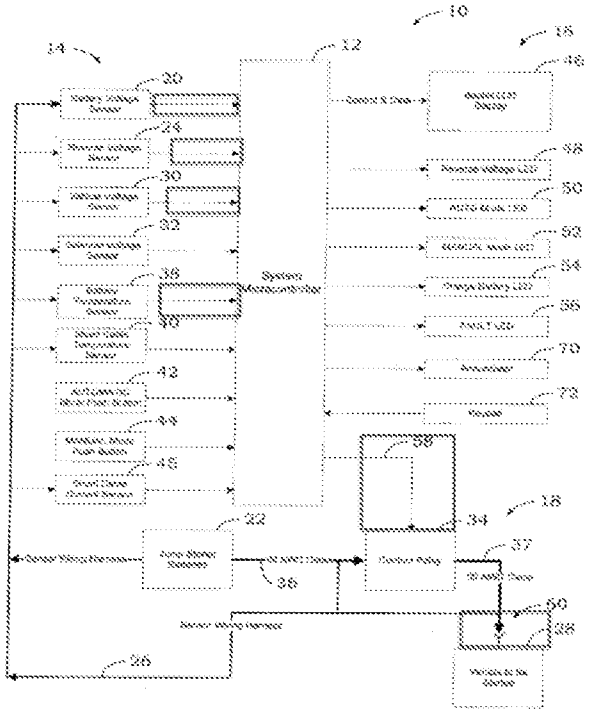
Fig. 2a

74. Richardson, Xinfang, and Richardet both relate to jump starting vehicle engines. Ex. 1014 at 2:33-36.

75. Therefore it would have been obvious to one having 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)**

76. Accordingly claim 22 would have been obvious.

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Richardson's *Fig. 1* reproduced above

Allowable Subject Matter

77. Claims 42,44-45 would be allowable if rewritten to overcome the rejection(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.

78. Regarding claim 42, the prior art of record either taken alone or in combination thereof fails to teach or reasonably suggest, in the claimed combination, wherein the USB 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.

79. Regarding claim 44, the prior art of record either taken alone or in combination thereof fails to teach or reasonably suggest, in the claimed combination, further comprising a USB output control circuit connected to a microcontroller and configured to allow the USB output to be turned on and off by software control to prevent the internal lithium battery from getting too low in capacity.

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80. Regarding claim 45, the prior art of record either taken alone or in combination thereof fails to teach or reasonably suggest, in the claimed combination, wherein the USB connector includes a voltage divider for enabling charge to certain electronic devices.

Conclusion

81. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M'BAYE DIAO whose telephone number is (571)272-6127. The examiner can normally be reached on M-F; 9:00AM-6:30PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DREW A DUNN can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M'BAYE DIAO
Primary Examiner
Art Unit 2859

/M BAYE DIAO/
Primary Examiner, Art Unit 2859
June 21, 2021

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Notice of References Cited	Application/Control No. 16/450,422	Applicant(s)/Patent Under Reexamination Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20110175461-A1	07-2011	Tinaphong; Prapan Paul	H02J50/402	307/149
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/07/2020	02/05/2021	06/21/2021						
	1	✓	✓	✓						
	2	✓	✓	✓						
	3	✓	✓	✓						
	4	✓	✓	✓						
	5	✓	✓	✓						
	6	✓	✓	✓						
	7	✓	✓	✓						
	8	✓	✓	✓						
	9	✓	✓	✓						
	10	✓	✓	✓						
	11	✓	✓	-						
	12	✓	✓	✓						
	13	✓	✓	✓						
	14	✓	✓	✓						
	15	✓	✓	✓						
	16	✓	✓	✓						
	17	✓	✓	✓						
	18	✓	✓	✓						
	19	✓	✓	✓						
	20	✓	✓	✓						
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	22	✓	✓	✓						
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	28	-	-	-						
	29	✓	✓	✓						
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	35	✓	✓	✓						
	36	✓	✓	✓						
	37	✓	✓	✓						
	38	✓	✓	✓						
	39		✓	✓						
	40		✓	✓						
	41		✓	✓						
	42		✓	✓						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

CLAIM		DATE								
Final	Original	08/07/2020	02/05/2021	06/21/2021						
	43		✓	✓						
	44		✓	✓						
	45		✓	✓						
	46		✓	✓						
	47		✓	✓						
	48		✓	✓						
	49		✓	✓						
	50		✓	✓						
	51		✓	✓						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

CPC - Searched*		
Symbol	Date	Examiner
B60L53/14 H02J7/342 H02J7/0047 H02J7/0034 H02J7/0029 H02J1/122 H02J7/00 H02J7/0048 H02J2310/46	08/07/2020	MD

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
320	105	08/07/2020	MD

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	**Art Unit**
	M'BAYE DIAO	2859

Search Notes		
Search Notes	**Date**	**Examiner**
PE2E SEARCH(Search Notes Attached).	08/07/2020	MD
PLUS Search Conducted.	07/28/2020	MD
Inventor Name and Assignee Search (SEARCH).	08/07/2020	MD
Parent Applications Noted.	08/07/2020	MD
IPR2018-00503 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-00944 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-01387 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2021-00309 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	02/04/2021	MD
Updated search above.	02/04/2021	MD
(307/150 Text Search Only -- see attached Search Printout).	02/04/2021	MD
IP.com Search Conducted.	02/04/2021	MD
Updated search above.	06/21/2021	MD

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L237	0	L2 WITH (USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:10 AM
L238	0	L2 AND (USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:47 AM
L239	10	"9506446".pn.	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:48 AM
L240	7	(USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 11:56 AM
L241	1641	(USB (universal NEAR serial NEAR bus)) NEAR input NEAR (connect$3 coupl$2 adapt$3 male female mater mating plug receptacle)	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 12:00 PM
L242	1	L241 L240	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/05/24 12:01 PM
L243	4	L60 L241	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/05/24 12:04 PM
L244	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) SAME L241 SAME ((usb (universal NEAR serial NEAR bus)) NEAR input NEAR connect$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:45 PM
L245	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) SAME L241 SAME ((usb (universal NEAR	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM

EXHIBIT 1002
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		serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2)					
L246	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) AND L241 AND ((usb (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM
L247	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) AND L241 AND ((usb (universal NEAR serial NEAR bus)) NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM
L248	0	L233 L121 L222 L223	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/06/21 03:31 PM
L249	0	L2 WITH (USB (universal NEAR serial NEAR (cable bus connect$2))) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/21 03:32 PM
L250	7	((USB (universal NEAR serial NEAR (cable bus connect$2))) NEAR input NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/21 03:33 PM
L251	0	L231 L233 L241 L228	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/06/21 03:49 PM
L252	0	L231 L233 L241 L205	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/06/21 03:50 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

Electronic Patent Application Fee Transmittal

Application Number:	16450422
Filing Date:	24-Jun-2019
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Filer:	William Leonard Klima/Lisa Elliott
Attorney Docket Number:	054985-000055-US-05

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	1	50	50
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	1	240	240
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	2251	1	110	110
Miscellaneous:				
		Total in USD ($)		**400**

Electronic Acknowledgement Receipt

EFS ID:	44117880
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Lisa Elliott
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985-000055-US-05
Receipt Date:	25-OCT-2021
Filing Date:	24-JUN-2019
Time Stamp:	18:23:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$400
RAM confirmation Number	E20210OI23420724
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Extension of Time	EOT_____1x-Small.pdf	165043 b85a67d279d953938ad438005e50621eb906c5fe	no	2
Warnings:					
Information:					
2	Amendment/Req. Reconsideration-After Non-Final Reject	2021_10_25_RNFOA.pdf	260380 edcea93b7788c0b12adb4e90beaee1ebd1974cbd	no	31
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	42843 96a982e7a16ad5d3487bc53b9012b9369d9d5552	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	468266		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PTO/AIA/22 (10-20)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): 054985-000055-US-05

Application Number: 16/450,422

Filed: June 24, 2019

For: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

Art Unit: 2859

Examiner: DIAO

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	Micro Entity Fee	
☑ One month (37 CFR 1.17(a)(1))	$220	$110	$55	$ 110
☐ Two months (37 CFR 1.17(a)(2))	$640	$320	$160	$
☐ Three months (37 CFR 1.17(a)(3))	$1,480	$740	$370	$
☐ Four months (37 CFR 1.17(a)(4))	$2,320	$1,160	$580	$
☐ Five months (37 CFR 1.17(a)(5))	$3,160	$1,580	$790	$

☑ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.

☑ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 32422.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/William L. Klima/ — Signature

October 25, 2021 — Date

William L. Klima — Typed or printed name

202-467-8800 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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.

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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 or improper 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, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for

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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.

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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)

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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.

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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.

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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,

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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

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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

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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.

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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

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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.

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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.

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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~~.

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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

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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.

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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.

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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

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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

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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

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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

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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

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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

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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."

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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)**.

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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

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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."

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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,

VORYS, SATER, SEYMOUR and PEASE LLP

/William L. Klima/
William L. Klima, Registration No.: 32422
Customer No.: 20230

Date: October 25, 2021

VORYS, SATER, SEYMOUR and PEASE LLP
1909 K Street, NW, 9th Floor
Washington, DC 20006-1152
Tel: (202) 467-8800

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/450,422	Filing Date 06/24/2019	☐ To be Mailed

ENTITY: ☐ LARGE ☑ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $230 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	10/25/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 48	Minus	** 46	= 2		x $50 =	100
	Independent (37 CFR 1.16(h))	* 5	Minus	*** 4	= 1		x $240 =	240
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	340

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DAMALI AYANA BERRY/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

United States Patent and Trademark Office

Office of the Chief Financial Officer

Document Code:WFEE

User :92419

Sale Accounting Date:11/01/2021

Sale Item Reference Number	Effective Date
16450422	10/25/2021

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20210UD26133511	2202	CLAIMS IN EXCESS OF 20	$50.00	Deposit Account

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

20230 7590 11/16/2021

Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
Washington, DC 20006-1152

EXAMINER
DIAO, M BAYE

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
11/16/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patlaw@vorys.com

Applicant-Initiated Interview Summary	Application No. 16/450,422	Applicant(s) Nook et al.		
	Examiner M'BAYE DIAO	Art Unit 2859	AIA (First Inventor to File) Status Yes	Page 1 of 2

All Participants (applicant, applicants representative, PTO personnel)	Title	Type
M'BAYE DIAO	Primary Examiner	Telephonic
William L. Klima Reg. No. 32,422	Attorney	

Date of Interview: 10 November 2021

Issues Discussed:

35 U.S.C. 103

Applicant's representative and Examiner discussed the prior art of record as applied to independent claims 1, 29, 30, 38, and newly added claim 53 in view of the arguments presented in applicant's representative reply filed on 10/25/2021(see pages 7-8 of Remarks/Arguments) and the current amendments made to the independent claims. It was agreed upon the combination of Richardson, Xinfang, and Tinaphong fails to teach or reasonably suggest, among other patentable features, "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 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 source"as recited in claims 1,29-30, and 38. As per claim 53, both parties agree to Examiner's amendment as follows: "...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 increasing voltage from the external USB charger to charge voltage for charging the power supply, wherein the DC-DC converter can be turned on and off by an output of the microcontroller".

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	11/10/2021

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Applicant-Initiated Interview Summary	Application No. 16/450,422	Applicant(s) Nook et al.		
	Examiner M'BAYE DIAO	Art Unit 2859	AIA (First Inventor to File) Status Yes	Page 2 of 2

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

UNITED STATES PATENT AND TRADEMARK OFFICE

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NOTICE OF ALLOWANCE AND FEE(S) DUE

20230 7590 11/24/2021

Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
Washington, DC 20006-1152

EXAMINER
DIAO, M BAYE

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 11/24/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

TITLE OF INVENTION: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	02/24/2022

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

20230 7590 11/24/2021

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

TITLE OF INVENTION: PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	02/24/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
DIAO, M BAYE	2859	320-105000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1_____
2_____
3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑Issue Fee ❑Publication Fee (if required) ❑Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

20230 7590 11/24/2021

Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
Washington, DC 20006-1152

EXAMINER	
DIAO, M BAYE	
ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 11/24/2021

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Notice of Allowability	Application No. 16/450,422	Applicant(s) Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to Amendment filed on 10/25/2021.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-10,12-23,29-54 (renumbered 1-48) . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☑ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☑ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	11/15/2021

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Response to Amendment

2. Acknowledgement is made of amendment filed on 10/25/2021 in which claims 1,19,29-31, 35, 37-40,48,50-51 are currently amended, claims 11, 24-28 have been previously canceled while claims 52-54 have been newly added. By this amendment, claims 1-10,12-23,29-54 are now pending in the application.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with William L. Klima Reg. No. 32,422 on 11/10/2021.

4. In claim 53, page 15, lines 2-7, **delete,**

"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.", **and insert, --** a USB input charge circuit connecting the USB connector to the

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

power supply, the USB input charge circuit comprising a DC/DC converter, the USB input charge circuit configured for ~~converting power~~ increasing voltage 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.--

REASONS FOR ALLOWANCE

5. The following is an examiner's statement of reasons for allowance: Claims 1-10,12-23,29-54 (renumbered 1-48).

6. The prior art of record either taken alone or in combination thereof fails to teach or reasonably suggest, in the claimed combination,

7. As in claim 1: a jump starter apparatus comprising among other patentable features, "…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".

8. Claims 2-10,12-23,40-41,43-52 depend directly or indirectly from claim 1 and therefore are allowed for the same reasons.

9. As in claim 29: a jump starter apparatus comprising among other patentable features, "…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 for charging the power supply; and a USB input connector connected to the USB input charge circuit, the USB

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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.

10. As in claim 30: A jump starting device comprising among other patentable features, "…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 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 and the USB input charge circuit to the power supply".

11. Claims 31-37 depend directly or indirectly from claim 30 and therefore are allowed for the same reasons.

12. As in claim 38: A jump starting device comprising among other patentable features, "…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 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 source".

13. Claims 39 and 42 depend directly or indirectly from claim 38 and therefore are allowed for the same reasons.

14. As in claim 53: A jump starting device comprising among other patentable features, "…-- 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

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increasing voltage from the external USB charger to charge voltage for charging the power supply, wherein the DC-DC converter can be turned on and off by an output of the microcontroller".

15. Claim 54 depend directly from claim 53 and therefore is allowed for the same reasons.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

16. Applicant's arguments, see page 7-8 of remarks/arguments, filed on 10/25/2021 with respect to claims 1-10,12-23,19-54 have been fully considered and are persuasive. The rejection of claims 1-10,12-23,29-51 has been withdrawn in view of arguments and amendments made to the independent claims 1, 29, 30, and 38.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M'BAYE DIAO whose telephone number is (571)272-6127. The examiner can normally be reached M-F; 9:00AM-6:30PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DREW A DUNN can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M'BAYE DIAO
Primary Examiner
Art Unit 2859

/M BAYE DIAO/
Primary Examiner, Art Unit 2859
November 15, 2021

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Notice of References Cited	Application/Control No. 16/450,422	Applicant(s)/Patent Under Reexamination Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	Page 1 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6130519-A	10-2000	Whiting; John S.	H02J7/0034	320/105
*	B	US-20130314041-A1	11-2013	PROEBSTLE; Hartmut	F02N11/087	320/109
*	C	US-20120091944-A1	04-2012	Rogers; Chad	H02J7/0042	320/105
*	D	US-20070285049-A1	12-2007	Krieger; Michael	H01M50/213	320/105
*	E	US-20050252573-A1	11-2005	Montani, Mark A.	B67D7/04	141/98
*	F	US-20050040788-A1	02-2005	Tseng, Wen lng	H02J7/0042	320/111
*	G	US-8172603-B1	05-2012	Richardet, Jr.; David	H01R11/24	439/504
*	H	US-6262559-B1	07-2001	Eggert; Daniel M.	H02J7/342	320/103
*	I	US-5083076-A	01-1992	Scott; Clyde A.	H02J7/0034	320/105
*	J	US-4885524-A	12-1989	Wilburn; William M.	H01M10/44	320/105
*	K	US-20130241488-A1	09-2013	Dao; Yuan	H02J7/0013	320/111
*	L	US-20120319487-A1	12-2012	Shah; Rakesh	H02J9/062	307/66
*	M	US-5965998-A	10-1999	Whiting; John S.	H02J7/0034	320/165

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 16/450,422	Applicant(s)/Patent Under Reexamination Nook et al.	
	Examiner M'BAYE DIAO	Art Unit 2859	Page 2 of 2

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-5650974-A	07-1997	Yoshimura; Yoshimasa	G11C5/141	365/228
*	B	US-20150137740-A1	05-2015	Allos; Khalid Mike	H02J7/0034	320/107
*	C	US-9041244-B2	05-2015	Graf; Alfons	B60R16/03	307/10.7
*	D	US-20110175461-A1	07-2011	Tinaphong; Prapan Paul	H02J50/402	307/149
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

CPC - Searched*		
Symbol	Date	Examiner
B60L53/14 H02J7/342 H02J7/0047 H02J7/0034 H02J7/0029 H02J1/122 H02J7/00 H02J7/0048 H02J2310/46	08/07/2020	MD

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
320	105	08/07/2020	MD

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

Search Notes		
Search Notes	**Date**	**Examiner**
PE2E SEARCH(Search Notes Attached).	08/07/2020	MD
PLUS Search Conducted.	07/28/2020	MD
Inventor Name and Assignee Search (SEARCH).	08/07/2020	MD
Parent Applications Noted.	08/07/2020	MD
IPR2018-00503 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-00944 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2020-01387 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	08/07/2020	MD
IPR2021-00309 Reviewed Petition for Inter Partes Review of U.S. Patent No. 9,007,015.	02/04/2021	MD
Updated search above.	02/04/2021	MD
(307/150 Text Search Only -- see attached Search Printout).	02/04/2021	MD
IP.com Search Conducted.	02/04/2021	MD
Updated search above.	06/21/2021	MD
Updated search above.	11/15/2021	MD

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
	See attached text.	11/15/2021	MD

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	Art Unit
	M'BAYE DIAO	2859

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/07/2020	02/05/2021	06/21/2021	11/15/2021					
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46	42		✓	✓	=					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
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	M'BAYE DIAO	2859

CLAIM		DATE								
Final	Original	08/07/2020	02/05/2021	06/21/2021	11/15/2021					
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32	50		✓	✓	=					
33	51		✓	✓	=					
34	52				=					
47	53				=					
48	54				=					

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	**Art Unit**
	M'BAYE DIAO	2859

CPC							
Symbol						**Type**	**Version**
B60L	/	53	/	14		F	2019-02-01
H02J	/	**7**	/	0034		I	2013-01-01
H02J	/	**7**	/	0029		I	2013-01-01
H02J	/	**7**	/	0047		I	2013-01-01
H02J	/	**7**	/	342		I	2020-01-01
H02J	/	1	/	122		A	2020-01-01
H02J	/	**7**	/	00		A	2013-01-01
H02J	/	**7**	/	0048		A	2020-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	48	
/M BAYE DIAO/ Primary Examiner, Art Unit 2859	15 November 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

U.S. Patent and Trademark Office — Part of Paper No.: 20211115

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	**Art Unit**
	M'BAYE DIAO	2859

INTERNATIONAL CLASSIFICATION				
CLAIMED				
B60L53/14	/	53	/	14
H02J7/00	/	7	/	00
H02J7/34	/	7	/	34
H02J1/10	/	1	/	10

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**
320	105

CROSS REFERENCES(S)							
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**						

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	48	
/M BAYE DIAO/ Primary Examiner, Art Unit 2859	15 November 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

U.S. Patent and Trademark Office — Part of Paper No.: 20211115

EXHIBIT 1002
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/450,422	Nook et al.
	Examiner	**Art Unit**
	M'BAYE DIAO	2859

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10	18	19		28	43	37	28	46				
2	2		11	19	20	35	29	44	38	29	47				
3	3	11	12	20	21	36	30	45	39	30	48				
4	4	12	13	21	22	37	31	23	40	31	49				
5	5	13	14	22	23	38	32	24	41	32	50				
6	6	14	15		24	39	33	46	42	33	51				
7	7	15	16		25	40	34	25	43	34	52				
8	8	16	17		26	41	35	26	44	47	53				
9	9	17	18		27	42	36	27	45	48	54				

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	48	
/M BAYE DIAO/ Primary Examiner, Art Unit 2859	15 November 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

U.S. Patent and Trademark Office

Part of Paper No.: 20211115

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:42 PM
L2	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:43 PM
L3	166340	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:43 PM
L4	0	vehicle adj batter$3 adj isolat$3 adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:44 PM
L5	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:47 PM
L6	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:48 PM
L7	0	reverse adj popularity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:49 PM
L8	186	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:49 PM
L9	0	(microcontroller microcomputer microprocessor processor controller) and L1 and L2 and L3 and L6 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L10	2960317	(microcontroller microcomputer microprocessor processor controller)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L11	0	L1 and L2 and L3 and L6 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L12	0	L1 and L2 and L3 and L6	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L13	0	L1 and L2 and L3 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L14	15	L1 and L2 and L3 and L10	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:51 PM
L15	3	L6 and L8	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:52 PM
L16	195	320/105.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:55 PM
L17	1845	320/110-112.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:55 PM
L18	0	(L16 L17) and (L14 L15)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:56 PM
L19	22	("5635817"|"8493021"|"7872361"|"20040130298"|"20100301800"|"5921809"|"6140796"|"6632	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 12:57 PM

		103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.					
L20	0	((integrated combo) adj jumper) with ((plug connector) same (other another) adj end$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:48 PM
L21	0	((integrated combo combination assembly) adj jumper) with ((plug connector) same (other another) adj end$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:48 PM
L22	0	((integrated combo combination assembly) adj jumper) and ((plug connector) same (other another) adj end$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L23	222	((integrated combo combination assembly) adj jumper) and ((plug connector))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L24	1674253	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L25	6642	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L26	186	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L27	3	L24 and L25 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:49 PM
L28	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:50 PM
L29	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:50 PM
L30	48	L28 and L29	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:50 PM
L31	0	L23 L24 L25 L26	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:50 PM
L32	0	L23 L24 L25	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:50 PM
L33	0	L23 L30	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:51 PM
L34	0	L23 L30	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:51 PM
L35	1	L26 L30	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2014/10/23 03:51 PM
L36	8	L24 L30	(US-PGPUB; USPAT;	AND	ON	ON	2014/10/23

			EPO)				03:51 PM
L37	12	L27 L35 L36	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L38	195	320/105.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L39	1845	320/110-112.ccls. and (@ad<="20140708")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L40	1	(L38 L39) and (L37 L30)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:52 PM
L41	8	(L36) and (L37)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L42	8	(L36) and (L37)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L43	8	(L36) and (L30)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L44	8	L42 L43	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 03:56 PM
L45	0	L23 and L30	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:03 PM
L46	0	L23 and L29 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:04 PM
L47	0	L23 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:04 PM
L48	1	L30 and L26	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 04:04 PM
L49	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-5219034-$ or US-5281792-$ or US-5354215-$ or US-5367250-$ or US-5479160-$ or US-5515939-$ or US-5635804-$ or US-5635818-$).did. or (US-5687573-$ or US-5754031-$ or US-5780953-$ or US-	(USPAT)	OR	ON	ON	2014/10/23 05:39 PM

		5796255-$ or US- 6036574-$ or US- 6111393-$ or US- 6130519-$ or US- 6232728-$ or US- 3590357-$ or US- 3585358-$ or US- 3654538-$ or US- 3648146-$ or US- 3783846-$ or US- 4246559-$ or US- 4251847-$ or US- 4272142-$ or US- 4274690-$ or US- 4305004-$ or US- 4309675-$ or US- 4321542-$ or US- 4323830-$ or US- 4327420-$ or US- 4327519-$ or US- 4346335-$ or US- 4346893-$ or US- 4349774-$ or US- 4359893-$).did. or (US- 4366430-$ or US- 4379989-$ or US- 4380718-$ or US- 4383213-$ or US- 4388618-$ or US- 4420212-$ or US- 4435660-$ or US- 4449089-$ or US- 4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US- 4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US-					

		4831321-$ or US- 4840583-$ or US- 4859987-$ or US- 4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5277285-$).did. or (US- 5287085-$ or US- 5306990-$ or US- 5343128-$ or US- 5343135-$ or US- 5357186-$ or US- 5430334-$ or US- 5498933-$ or US- 5502368-$ or US- 5522582-$ or US- 5546264-$ or US- 5548462-$ or US- 5555864-$ or US- 5560442-$ or US- 5565760-$ or US- 5571999-$ or US- 5593797-$ or US- 5604653-$ or US- 5626504-$ or US- 5631544-$ or US- 5635817-$ or US- 5650242-$ or US- 5652471-$ or US- 5656922-$ or US- 5691892-$ or US- 5693995-$ or US- 5701038-$ or US- 5710471-$).did. or (US- 5712549-$ or US- 5712568-$ or US- 5731669-$ or US- 5747909-$ or US- 5753989-$ or US- 5767660-$ or US- 5772468-$ or US- 5777455-$ or US- 5790037-$ or US- 5795182-$ or US- 5820407-$ or US-					

		5847911-$ or US-5868076-$ or US-5892342-$ or US-5913911-$ or US-5921809-$).did.					
L50	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L51	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L52	48	L50 and L51	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L53	1	L52 and L49	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 05:41 PM
L54	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:17 PM
L55	0	L54 with ((integrated embedded) adj plug)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:21 PM
L56	0	L54 and ((integrated embedded) adj plug)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:21 PM
L57	0	L54 and ((integrated embedded) adj (plug connect$3 socket$2))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:23 PM
L58	83	L54 and (plug connect$3 socket$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:28 PM
L59	36	L54 and (plug)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:28 PM
L60	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L61	24862	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L62	48	L60 and L61	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L63	0	L59 and L62	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/23 11:29 PM
L64	225	(reverse reversed) adj polarity adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:19 PM
L65	0	(vehicle automobile car locomotive motorbike motorcycle) adj battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:21 PM
L66	95	battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:21 PM
L67	2960317	(microcontroller microcomputer microprocessor	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM

		processor controller)					
L68	0	L64 and L66 and L67	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM
L69	3558	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM
L70	0	L64 and L66 and L69	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:22 PM
L71	0	L64 and L66	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:23 PM
L72	10	(US-20130314041-$ or US-20120091944-$ or US-20070285049-$ or US-20050252573-$ or US-20050040788-$).did. or (US-6130519-$ or US-8172603-$ or US-6262559-$ or US-5083076-$ or US-4885524-$).did.	(US-PGPUB; USPAT)	OR	ON	ON	2014/10/24 11:49 PM
L73	22	("5635817"|"8493021"|"7872361"|"20040130298"|"20100301800"|"5921809"|"6140796"|"6632103"|"7301303"|"5793185"|"6262492"|"5635818"|"8376775"|"20140159509"|"5111130"|"5189359"|"6756764"|"5795182"|"6212054"|"8199024"|"20020041174"|"20130154543").PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:50 PM
L74	0	L72 and L73	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/10/24 11:50 PM
L75	4	("20050110467"|"6362599"|"6803743"|"7148580").PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/11/12 05:02 PM
L76	2	WO-2013137873-$.did.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2014/12/03 12:05 PM
L77	134	advantages near4 (lithium-ion) adj batter$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:03 PM
L78	196	320/105.ccls. and (@ad<="20140703")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L79	0	L77 and L78	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L80	3573	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L81	25112	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L82	167713	output adj port	(US-PGPUB; USPAT;	OR	ON	ON	2014/12/03

			EPO)				01:04 PM
L83	2991441	(microcontroller microcomputer microprocessor processor controller)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L84	15	L80 and L81 and L82 and L83	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L85	0	L77 and L84	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:04 PM
L86	188	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L87	0	L77 and L86	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L88	224	((integrated combo combination assembly) adj jumper) and ((plug connector))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L89	0	L77 and L88	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L90	25112	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L91	0	L77 and L90	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:05 PM
L92	1687265	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:06 PM
L93	53	L77 and L92	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:06 PM
L94	0	L93 and L90	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:07 PM
L95	84	(jump adj (start$3 cable)) with (alligator$2 clamp$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:07 PM
L96	0	L93 and L95	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:07 PM
L97	150	(US-5793185-$ or US-5752754-$ or US-4562893-$ or US-4793175-$ or US-4972135-$ or US-5886501-$ or US-5936317-$ or US-4521204-$ or US-4540376-$ or US-4554221-$ or US-4565538-$ or US-4573943-$ or US-4759728-$ or US-4798975-$ or US-4878877-$ or US-4889516-$ or US-4969834-$ or US-5179494-$ or US-	(USPAT)	OR	ON	ON	2014/12/03 01:08 PM

		5219034-$ or US- 5281792-$ or US- 5354215-$ or US- 5367250-$ or US- 5479160-$ or US- 5515939-$ or US- 5635804-$ or US- 5635818-$).did. or (US- 5687573-$ or US- 5754031-$ or US- 5780953-$ or US- 5796255-$ or US- 6036574-$ or US- 6111393-$ or US- 6130519-$ or US- 6232728-$ or US- 3590357-$ or US- 3585358-$ or US- 3654538-$ or US- 3648146-$ or US- 3783846-$ or US- 4246559-$ or US- 4251847-$ or US- 4272142-$ or US- 4274690-$ or US- 4305004-$ or US- 4309675-$ or US- 4321542-$ or US- 4323830-$ or US- 4327420-$ or US- 4327519-$ or US- 4346335-$ or US- 4346893-$ or US- 4349774-$ or US- 4359893-$).did. or (US- 4366430-$ or US- 4379989-$ or US- 4380718-$ or US- 4383213-$ or US- 4388618-$ or US- 4420212-$ or US- 4435660-$ or US- 4449089-$ or US- 4459536-$ or US- 4461958-$ or US- 4463402-$ or US- 4479083-$ or US- 4482830-$ or US- 4488147-$ or US- 4491110-$ or US- 4497306-$ or US- 4503378-$ or US- 4508516-$ or US- 4511831-$ or US- 4511825-$ or US- 4516648-$ or US- 4537174-$ or US- 4550280-$ or US-					

		4575670-$ or US- 4584513-$ or US- 4615958-$ or US- 4616166-$).did. or (US- 4631455-$ or US- 4760000-$ or US- 4764852-$ or US- 4769586-$ or US- 4799135-$ or US- 4820966-$ or US- 4829223-$ or US- 4831321-$ or US- 4840583-$ or US- 4859987-$ or US- 4868409-$ or US- 4871957-$ or US- 4871959-$ or US- 4884464-$ or US- 4885524-$ or US- 4892204-$ or US- 4913981-$ or US- 4923415-$ or US- 4924176-$ or US- 4975089-$ or US- 5012689-$ or US- RE34159-$ or US- 5241242-$ or US- 5245258-$ or US- H001236-$ or US- 5253138-$ or US- 5277285-$).did. or (US- 5287085-$ or US- 5306990-$ or US- 5343128-$ or US- 5343135-$ or US- 5357186-$ or US- 5430334-$ or US- 5498933-$ or US- 5502368-$ or US- 5522582-$ or US- 5546264-$ or US- 5548462-$ or US- 5555864-$ or US- 5560442-$ or US- 5565760-$ or US- 5571999-$ or US- 5593797-$ or US- 5604653-$ or US- 5626504-$ or US- 5631544-$ or US- 5635817-$ or US- 5650242-$ or US- 5652471-$ or US- 5656922-$ or US- 5691892-$ or US- 5693995-$ or US- 5701038-$ or US- 5710471-$).did. or (US-					

		5712549-$ or US-5712568-$ or US-5731669-$ or US-5747909-$ or US-5753989-$ or US-5767660-$ or US-5772468-$ or US-5777455-$ or US-5790037-$ or US-5795182-$ or US-5820407-$ or US-5847911-$ or US-5868076-$ or US-5892342-$ or US-5913911-$ or US-5921809-$).did.					
L98	0	L93 and L97	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:08 PM
L99	1856	320/110-112.ccls. and (@ad<="20140703")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:08 PM
L100	0	L93 and L99	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:08 PM
L101	1	"20130241488"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2014/12/03 01:39 PM
L102	1	"20050110467"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 11:35 AM
L103	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:06 PM
L104	3612	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L105	25490	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L106	169705	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L107	17	L104 and L105 and L106	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:07 PM
L108	4	L103 and L105 and L106	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:08 PM
L110	1	"6130519".pn.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 02:32 PM
L121	3824	(H02J7/0034 H02J7/0054 Y02E60/12 H02J7/0042, H02J2001/006).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L122	25490	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L123	169705	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM

L124	4	L121 and L122 and L123	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L125	4	L124 and (@ad<="20140703")	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2015/01/29 10:34 PM
L126	1	"9007015".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/23 12:22 PM
L127	2	"9506446".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/23 08:53 PM
L128	2	"20040130298"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/23 09:12 PM
L129	1	"20050110467"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 03:49 PM
L130	154	("5793185" "5752754" "4562893" "4793175" "4972135" "5886501" "5936317" "4521204" "4540376" "4554221" "4565538" "4573943" "4759728" "4798975" "4878877" "4889516" "4969834" "5179494" "5219034" "5281792" "5354215" "5367250" "5479160" "5515939" "5635804" "5635818" "5687573" "5754031" "5780953" "5796255" "6036574" "6111393" "6130519" "6232728" "3590357" "3585358" "3654538" "3648146" "3783846" "4246559" "4251847" "4272142" "4274690" "4305004" "4309675" "4321542" "4323830" "4327420" "4327519" "4346335" "4346893" "4349774" "4359893" "4366430" "4379989" "4380718" "4383213" "4388618" "4420212" "4435660" "4449089" "4459536" "4461958" "4463402" "4479083" "4482830" "4488147" "4491110" "4497306" "4503378" "4508516" "4511831" "4511825" "4516648" "4537174" "4550280" "4575670" "4584513" "4615958" "4616166" "4631455" "4760000" "4764852" "4769586" "4799135" "4820966" "4829223" "4831321"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM

		"4840583" "4859987" "4868409" "4871957" "4871959" "4884464" "4885524" "4892204" "4913981" "4923415" "4924176" "4975089" "5012689" RE34159 "5241242" "5245258" H001236 "5253138" "5277285" "5287085" "5306990" "5343128" "5343135" "5357186" "5430334" "5498933" "5502368" "5522582" "5546264" "5548462" "5555864" "5560442" "5565760" "5571999" "5593797" "5604653" "5626504" "5631544" "5635817" "5650242" "5652471" "5656922" "5691892" "5693995" "5701038" "5710471" "5712549" "5712568" "5731669" "5747909" "5753989" "5767660" "5772468" "5777455" "5790037" "5795182" "5820407" "5847911" "5868076" "5892342" "5913911" "5921809").pn.					
L131	4480	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L132	35042	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L133	62	L131 and L132	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L134	1	L130 AND L133	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2018/04/24 06:18 PM
L135	73	((batter$3 adj presence)) adj (sens$3 detect$4)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:16 PM
L136	259	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:16 PM
L137	0	L135 and L136	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:16 PM
L138	35	(positive negative) near vehicle near connect$2	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 07:18 PM
L139	73	((batter$3 adj presence)) adj (sens$3 detect$4)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:13 PM
L140	35	(positive negative) near vehicle near connect$2	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:13 PM

L141	0	L139 and L140	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:13 PM
L142	302	((integrated combo combination assembly) adj jumper) and ((plug connector))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:24 PM
L143	0	L139 and L142	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:24 PM
L144	37280	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:25 PM
L145	7	L139 and L144	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:25 PM
L146	4703	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L147	37280	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L148	67	L146 and L147	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L149	0	L145 and L148	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:26 PM
L150	130	battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:29 PM
L151	7	L145 and L150	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 09:29 PM
L152	2	"20040130298"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/01/05 11:34 PM
L153	14677	(B60L53/14 or H02J7/0047 or H02J7/0054 or H02J7/0029 or H02J7/0034 or H02J2007/0062 or H02J2007/005 or H02J2001/006).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/07/25 02:58 PM
L157	1	"9007015".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 11:00 AM
L158	1	"9770992".PN.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 12:07 PM
L159	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-4413234-$ or US-4546265-$ or US-5193212-$ or US-5194799-$ or US-	(USPAT)	OR	ON	ON	2019/10/07 01:22 PM

		5245304-$ or US- 5309031-$ or US- 5685630-$ or US- 5778026-$ or US- 5789099-$ or US- 5811913-$ or US- 5850134-$ or US- 4270834-$ or US- 4270827-$ or US- 4274043-$ or US- 4303962-$ or US- 4305550-$ or US- 4314193-$ or US- 4320333-$).did. or (US- 4354725-$ or US- 4374347-$ or US- 4373763-$ or US- 4373762-$ or US- 4377317-$ or US- 4384240-$ or US- 4409538-$ or US- 4467263-$ or US- 4470654-$ or US- 4496204-$ or US- 4516066-$ or US- 4527223-$ or US- 4552542-$ or US- 4555656-$ or US- 4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US- 5539610-$ or US- 5587916-$ or US-				

		5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US- 5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US- 6091906-$ or US- 6131065-$ or US- 6174618-$ or US- 4245308-$ or US- 4246635-$ or US- 4246544-$ or US- 4247813-$ or US- 4247753-$ or US- 4258292-$ or US- 4259631-$ or US- 4262278-$ or US- 4271092-$ or US- 4275385-$).did. or (US- 4276236-$ or US- 4281368-$ or US- 4290060-$ or US- 4292840-$ or US- 4307437-$ or US- 4306374-$ or US- 4314194-$ or US- 4316097-$ or US- 4321523-$ or US- 4321646-$ or US- 4322484-$ or US- 4323837-$ or US- 4326161-$ or US- 4330686-$ or US- 4332003-$ or US- 4335375-$ or US- 4335481-$ or US- 4339677-$ or US- 4345154-$ or US- 4355263-$ or US- 4355422-$ or US-					

		4356442-$ or US-4360789-$ or US-4361730-$ or US-4368507-$ or US-4382221-$ or US-4392185-$).did. or (US-4395774-$ or US-4399201-$ or US-4401856-$ or US-4410835-$ or US-4414298-$ or US-4413364-$ or US-4415272-$ or US-4415843-$ or US-4417240-$ or US-4416550-$ or US-4424854-$ or US-4430396-$ or US-4432938-$ or US-4435742-$ or US-4435486-$ or US-4445358-$).did.					
L160	150	(US-6014016-$ or US-6157148-$ or US-5819695-$ or US-6057055-$ or US-6168470-$ or US-6184794-$ or US-6240637-$ or US-4403274-$ or US-4413234-$ or US-4546265-$ or US-5193212-$ or US-5194799-$ or US-5245304-$ or US-5309031-$ or US-5685630-$ or US-5778026-$ or US-5789099-$ or US-5811913-$ or US-5850134-$ or US-4270834-$ or US-4270827-$ or US-4274043-$ or US-4303962-$ or US-4305550-$ or US-4314193-$ or US-4320333-$).did. or (US-4354725-$ or US-4374347-$ or US-4373763-$ or US-4373762-$ or US-4377317-$ or US-4384240-$ or US-4409538-$ or US-4467263-$ or US-4470654-$ or US-4496204-$ or US-	(USPAT)	OR	ON	ON	2019/10/07 01:22 PM

		4516066-$ or US- 4527223-$ or US- 4552542-$ or US- 4555656-$ or US- 4567476-$ or US- 4785229-$ or US- 4794315-$ or US- 4808495-$ or US- 4811176-$ or US- 4816972-$ or US- 4924358-$ or US- 4928094-$ or US- 4929522-$ or US- 4959640-$ or US- 5192904-$ or US- 5193198-$ or US- 5204611-$).did. or (US- 5206636-$ or US- 5225760-$ or US- 5237257-$ or US- 5245269-$ or US- 5260636-$ or US- 5267800-$ or US- 5287298-$ or US- 5291388-$ or US- 5304434-$ or US- 5406272-$ or US- 5426358-$ or US- 5472802-$ or US- 5506488-$ or US- 5528901-$ or US- 5536977-$ or US- 5539610-$ or US- 5587916-$ or US- 5608303-$ or US- 5614807-$ or US- 5643693-$ or US- 5660946-$ or US- 5662504-$ or US- 5672952-$ or US- 5682050-$ or US- 5689209-$ or US- 5723973-$ or US- 5747891-$).did. or (US- 5796181-$ or US- 5833499-$ or US- 5876423-$ or US- 5886501-$ or US- 5908714-$ or US- 5915224-$ or US- 5916709-$ or US- 5929604-$ or US- 5936317-$ or US- 5940520-$ or US- 5978491-$ or US- 6046445-$ or US- 6078214-$ or US- 6087740-$ or US-					

		6091906-$ or US- 6131065-$ or US- 6174618-$ or US- 4245308-$ or US- 4246635-$ or US- 4246544-$ or US- 4247813-$ or US- 4247753-$ or US- 4258292-$ or US- 4259631-$ or US- 4262278-$ or US- 4271092-$ or US- 4275385-$).did. or (US- 4276236-$ or US- 4281368-$ or US- 4290060-$ or US- 4292840-$ or US- 4307437-$ or US- 4306374-$ or US- 4314194-$ or US- 4316097-$ or US- 4321523-$ or US- 4321646-$ or US- 4322484-$ or US- 4323837-$ or US- 4326161-$ or US- 4330686-$ or US- 4332003-$ or US- 4335375-$ or US- 4335481-$ or US- 4339677-$ or US- 4345154-$ or US- 4355263-$ or US- 4355422-$ or US- 4356442-$ or US- 4360789-$ or US- 4361730-$ or US- 4368507-$ or US- 4382221-$ or US- 4392185-$).did. or (US- 4395774-$ or US- 4399201-$ or US- 4401856-$ or US- 4410835-$ or US- 4414298-$ or US- 4413364-$ or US- 4415272-$ or US- 4415843-$ or US- 4417240-$ or US- 4416550-$ or US- 4424854-$ or US- 4430396-$ or US- 4432938-$ or US- 4435742-$ or US- 4435486-$ or US- 4445358-$).did.					
L161	4959	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:28 PM

L162	39692	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:28 PM
L163	70	L161 and L162	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:28 PM
L164	13669	320/105.ccls. (H02J7/0054 or H02J7/0034 or H02J7/0029 or H02J7/0047 or H02J2001/006 or H02J2007/005 or H02J2007/0062 or H02J7/0063 or H02J1/06 or H02J2007/004 or H02J2007/0037).cpc.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:31 PM
L165	331	(reverse reversed) adj polarity adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:32 PM
L166	135	battery adj (presence connection) adj (sens$3 detect$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:32 PM
L167	0	L165 and L166	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:32 PM
L168	0	L163 and (L165 L166) and L160	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:34 PM
L169	10	L163 and (L165 L166) and L164	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:34 PM
L170	4639064	(microcontroller microcomputer microprocessor processor controller)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:35 PM
L171	10	L169 and L170	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2019/10/07 01:35 PM
L172	38	((("THE") near3 ("NOCO") near3 ("COMPANY"))).AS,AANM.	(USPAT)	OR	ON	ON	2019/10/07 01:48 PM
L173	87	((("NOOK") near3 ("Jonathan")) OR (("NOOK") near3 ("William")) OR (("STANFIELD") near3 ("James")) OR (("UNDERHILL") near3 ("Derek"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2019/10/07 01:48 PM
L174	64	("20020041174"|"20040066168"|"20040130298"|"20050040788"|"20050110467"|"20050252573"|"20070285049"|"20100301800"|"20110068734"|"20120091944"|"20	(US-PGPUB; USPAT)	OR	ON	ON	2020/03/02 07:34 PM

		130154543"|"20130314041"|"20140159509"|"20150306964"|"20160001666"|"3933140"|"4041445"|"4885524"|"4910628"|"4931731"|"5083076"|"5111130"|"5189359"|"5486434"|"5635817"|"5635818"|"5793185"|"5795182"|"5921809"|"5965998"|"6054779"|"6130519"|"6140796"|"6147471"|"6212054"|"6262492"|"6262559"|"6362599"|"6386907"|"6426606"|"6632103"|"6648701"|"6756764"|"6803743"|"6822425"|"7148580"|"7301303"|"7749031"|"7872361"|"8076900"|"8172603"|"8199024"|"8376775"|"8493021"|"9506446"|"9770992"|"D625265"|"D649116"|"D689020"|"D726109"|"D726114"|"D726121"|"D735665"|"D746774").PN.					
L175	474	reverse near (polarity voltage) near detect$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:29 PM
L176	20	battery near isolat$3 near (sensor detector)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:29 PM
L177	0	L175 and L176	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:31 PM
L178	8	(L175 L176) and L174	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/03/02 08:32 PM
L179	2	("20180345803").PN.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/03/03 02:58 PM
L180	13	("10328808"|"10604024"|"20050110467"|"20070278990"|"20180111491"|"20180215274"|"20180269703"|"20180342891"|"20180345803"|"20190308518"|"5953681"|"9007015"|"9770992").PN.	(US-PGPUB; USPAT)	OR	ON	ON	2020/07/13 10:55 PM
L181	1	"9007015".PN.	(US-PGPUB; USPAT)	OR	ON	ON	2020/07/14 01:25 PM
L182	3	"20130154543"	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 01:04 PM
L183	3	"9954391".pn.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:39 PM
L184	240	output near port same (receptacle same plug)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:42 PM

L185	5219	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:43 PM
L186	0	L184 and L185	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:43 PM
L187	42234	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L188	248140	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L189	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L190	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L191	11	L187 and L188 and L189 and L190 and L185	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 02:44 PM
L192	240	(output near port) same (receptacle same plug)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:45 PM
L193	1949	(output near port) and (receptacle same plug)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:45 PM
L194	0	L191 and (L192 L193)	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 02:45 PM
L195	5219	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L196	42234	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L197	248140	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L198	2441926	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L199	10187	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L200	11	L196 and L197 and L198 and L199 and L195	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:00 PM
L201	2	"20040130298"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/07/16 04:35 PM
L202	2	("20180264959").PN.	(US-PGPUB; USPAT; USOCR; DERWENT)	OR	ON	ON	2020/07/16 11:46 PM
L203	1	"20090174362"	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 07:14 PM
L204	25362	(B60L53/14 or H02J7/342 or H02J7/0047 or H02J7/0034 or H02J7/0029 or H02J1/122 or H02J7/00 or H02J7/0048 or H02J2310/46).cpc. 320/105.ccls.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:21 PM

L205	5229	jump adj start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L206	42408	(internal adj power adj (supply source)) (internal adj PS)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L207	249036	output adj port	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L208	2450598	(isolat$3 (batter$3 adj presence) adj sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L209	10231	(isolat$3 (batter$3 adj presence)) adj sens$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L210	295	reverse adj polarity adj (detect$3 sens$3)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L211	11	L204 and L205 and L206 and L207 and (L208 L209) and L210	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2020/08/07 08:22 PM
L212	149	(US-6014030-$ or US-4306374-$ or US-4559478-$ or US-4771451-$ or US-5378549-$ or US-5745587-$ or US-6229381-$ or US-6232752-$ or US-4297531-$ or US-4356442-$ or US-4370526-$ or US-4386818-$ or US-4426678-$ or US-4459536-$ or US-4855662-$ or US-4872199-$ or US-4927722-$ or US-4935959-$ or US-4994727-$ or US-5349285-$ or US-5367250-$ or US-5371455-$ or US-5376476-$ or US-5408223-$ or US-5410237-$ or US-5425004-$).did. or (US-5560442-$ or US-5571999-$ or US-5739711-$ or US-6016044-$ or US-6042961-$ or US-6147471-$ or US-6211642-$ or US-3783846-$ or US-4253056-$ or US-4262353-$ or US-4272142-$ or US-4291106-$ or US-4301407-$ or US-4314009-$ or US-	(USPAT)	OR	ON	ON	2020/08/07 08:24 PM

		4315973-$ or US- 4321542-$ or US- 4322143-$ or US- 4333721-$ or US- 4343982-$ or US- 4346893-$ or US- 4349774-$ or US- 4361795-$ or US- 4379267-$ or US- 4380718-$ or US- 4397184-$ or US- 4399499-$ or US- 4399818-$).did. or (US- 4409304-$ or US- 4413248-$ or US- 4413220-$ or US- 4424264-$ or US- 4424812-$ or US- 4431868-$ or US- 4463402-$ or US- 4473756-$ or US- 4474537-$ or US- 4479083-$ or US- 4480018-$ or US- 4484145-$ or US- 4485271-$ or US- 4488147-$ or US- 4488110-$ or US- 4489341-$ or US- 4502211-$ or US- 4504556-$ or US- 4507856-$ or US- 4525438-$ or US- 4527111-$ or US- 4528255-$ or US- 4528424-$ or US- 4537174-$ or US- 4550280-$ or US- 4551670-$ or US- 4562128-$).did. or (US- 4564728-$ or US- 4579790-$ or US- 4581549-$ or US- 4588860-$ or US- 4592087-$ or US- 4592360-$ or US- 4602850-$ or US- 4625174-$ or US- 4631455-$ or US- 4757250-$ or US- 4770613-$ or US- 4774952-$ or US- 4774993-$ or US- 4782242-$ or US- 4798975-$ or US- 4803472-$ or US- 4809322-$ or US- 4818340-$ or US-					

		4819116-$ or US-4841203-$ or US-4871959-$ or US-4892204-$ or US-4903318-$ or US-4907261-$ or US-4923415-$ or US-4974588-$ or US-4990836-$).did. or (US-4998141-$ or US-5006427-$ or US-5007436-$ or US-5010307-$ or US-5020517-$ or US-5023493-$ or US-5189359-$ or US-5191507-$ or US-5193107-$ or US-5197085-$ or US-5198702-$ or US-5224476-$ or US-5229220-$ or US-5230637-$ or US-5230967-$ or US-5240655-$ or US-5245258-$ or US-H001236-$ or US-5253138-$ or US-5254081-$ or US-5280459-$ or US-5281491-$ or US-5296314-$ or US-5319300-$ or US-5325835-$ or US-5329588-$ or US-5344725-$).did. or (US-5347440-$ or US-5370665-$ or US-5384211-$ or US-5385512-$ or US-5404859-$ or US-5419745-$ or US-5425348-$ or US-5453643-$ or US-5453715-$ or US-5463380-$ or US-5481185-$ or US-5498984-$ or US-5508122-$ or US-5534368-$ or US-5539820-$).did.					
L213	0	L205 L206 (L208 or L209) L210 L212	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2020/08/07 08:24 PM
L214	3	"20160359375"	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO;	OR	ON	ON	2021/02/03 06:42 PM

			DERWENT; IBM_TDB)				
L215	12	battery WITH (jump ADJ start$3 NEAR (device apparatus)) SAME (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2)))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/04 10:11 AM
L216	0	battery WITH (jump ADJ start$3 NEAR (device apparatus)) WITH (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) SAME (USB NEAR (cable connect$2))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/04 11:36 AM
L217	20	battery WITH (jump ADJ start$3 NEAR (device apparatus)) AND (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) AND (USB NEAR (cable connect$2))	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/04 11:37 AM
L218	2	"20090174362"	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/04 06:50 PM
L219	10	"9506446".pn.	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/04 07:34 PM
L220	20	(jump ADJ start$3 NEAR (device apparatus)) AND (USB universal NEAR serial NEAR bus NEAR (circuit$2 (connect$2 coupl$2))) AND (USB NEAR (cable connect$2)) AND ((boost up DC/DC DC-DC DC-to-DC) NEAR convert$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 08:48 AM
L221	2	"9506446".pn.	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 10:46 AM
L222	1568	((DC-DC DC-to-DC boost DC/DC up) NEAR convert$2) WITH (resist$2 voltage) NEAR divi$4	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 11:39 AM

L223	161	(boost jump) NEAR start$3 NEAR (device apparatus)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 11:40 AM
L224	0	L223 L222	(US-PGPUB; USPAT; EPO)	AND	ON	ON	2021/02/05 11:40 AM
L225	1962	((DC-DC DC-to-DC boost DC/DC up) NEAR convert$2) WITH (resist$2 voltage) NEAR divi$4	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 11:41 AM
L226	355	(boost jump) NEAR start$3 NEAR (device apparatus)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 11:41 AM
L227	0	L226 L225	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 11:42 AM
L228	315	L226 L185	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 11:43 AM
L229	54	(B60L53/14 OR H02J7/0047 OR H02J7/0054 OR H02J7/0029 OR H02J7/0034 OR H02J2007/0062 OR H02J2007/005 OR H02J2001/006).cpc. AND L228	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/02/05 11:44 AM
L230	474	(usb (universal NEAR serial NEAR bus)) WITH ((resist$2 voltage) NEAR divi$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 12:03 PM
L231	1456	(usb (universal NEAR serial NEAR bus)) SAME ((resist$2 voltage) NEAR divi$4)	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/02/05 12:03 PM
L232	15	L231 L230 L226	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:04 PM
L233	474	L231 L230	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:05 PM
L234	15	L185 L233	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:05 PM
L235	35	L233 L121	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	AND	ON	ON	2021/02/05 12:06 PM

			IBM_TDB)				
L236	9	"9506446".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/02/05 12:27 PM
L237	0	L2 WITH (USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:10 AM
L238	0	L2 AND (USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:47 AM
L239	10	"9506446".pn.	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 10:48 AM
L240	7	(USB (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 11:56 AM
L241	1641	(USB (universal NEAR serial NEAR bus)) NEAR input NEAR (connect$3 coupl$2 adapt$3 male female mater mating plug receptacle)	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/05/24 12:00 PM
L242	1	L241 L240	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/05/24 12:01 PM
L243	4	L60 L241	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/05/24 12:04 PM
L244	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) SAME L241 SAME ((usb (universal NEAR serial NEAR bus)) NEAR input NEAR connect$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:45 PM
L245	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) SAME L241 SAME ((usb (universal NEAR	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM

		serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2)					
L246	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) AND L241 AND ((usb (universal NEAR serial NEAR bus)) NEAR input NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM
L247	0	((jump ADJ start$3 NEAR (apparatus device module)) L226) AND L241 AND ((usb (universal NEAR serial NEAR bus)) NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/05/24 12:46 PM
L248	0	L233 L121 L222 L223	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/06/21 03:31 PM
L249	0	L2 WITH (USB (universal NEAR serial NEAR (cable bus connect$2))) NEAR input NEAR charg$3 NEAR circuit$2	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/21 03:32 PM
L250	7	((USB (universal NEAR serial NEAR (cable bus connect$2))) NEAR input NEAR charg$3 NEAR circuit$2)	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/21 03:33 PM
L251	0	L231 L233 L241 L228	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/06/21 03:49 PM
L252	0	L231 L233 L241 L205	(US-PGPUB; USPAT; USOCR; FIT (CN, EP, FR, JP, KR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/06/21 03:50 PM
L253	163392	((USB (universal NEAR serial NEAR bus)) input NEAR charg$3 NEAR circuit$2) WITH (USB NEAR (connector coupler))	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO,	OR	ON	ON	2021/11/15 10:30 AM

			NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L254	515	external NEAR USB NEAR charg$3	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/15 10:47 AM
L255	6101	(jump boost) ADJ start$3	(US-PGPUB; USPAT; EPO)	OR	ON	ON	2021/11/15 10:51 AM
L256	15004989	power NEAR supply	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/15 10:51 AM
L257	0	L253 L254 L255 L256	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	AND	ON	ON	2021/11/15 10:52 AM

L258	0	(L223 L226) AND L253 AND L254 AND L255 AND L256	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/15 10:57 AM
L259	0	(L223 L226) AND L253 AND L254 AND L255	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/11/15 11:02 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N111	0	(jump and vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:50 PM
N112	0	(vehicle and internal and power and supply and polarity and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:50 PM
N113	0	(vehicle and internal	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29

		and power and supply and output$2 and isolation and sensor and reverse and polarity and sensor and switch and microcontrol$3 and input and signal$2).clm.					04:50 PM
N114	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and switch and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:51 PM
N115	0	(vehicle and internal and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:51 PM
N116	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and input and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:52 PM
N117	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:52 PM
N118	0	(vehicle and power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:52 PM
N119	0	(power and supply and output$2 and isolation and sensor and reverse and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:53 PM
N120	0	(power and supply and output$2 and isolation and sensor and revers$3 and polarity and switch$3 and	(US-PGPUB; USPAT)	OR	OFF	OFF	2015/01/29 04:53 PM

		microcontrol$3 and signal$1).clm.					
N154	4	(supply and output$2 and isolat$3 and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/07/25 05:23 PM
N155	4	(supply and output$4 and isolat$3 and sensor and revers$3 and polarity and switch$3 and microcontrol$3 and signal$1).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/07/25 05:23 PM
N156	4	N154 and N155	(US-PGPUB; USPAT)	OR	OFF	OFF	2019/07/25 05:24 PM
N157	6	(power AND supply AND output$4 AND isolat$3 AND sensor AND revers$3 AND polarity AND switch$3 AND microcontrol$3 AND signal$1 AND USB AND connect$2).clm.	(US-PGPUB; USPAT)	OR	OFF	OFF	2021/11/15 11:13 AM

PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

BACKGROUND OF THE INVENTION

The present invention relates generally to apparatus for jump-starting a vehicle having a depleted or discharged battery. Prior art devices are known, which provide either a pair of electrical connector cables that connect a fully-charged battery of another vehicle to the engine start circuit of the dead battery vehicle, or portable booster devices which include a fully-charged battery which can be connected in circuit with the vehicle's engine starter through a pair of cables.

Problems with the prior art arose when either the jumper terminals or clamps of the cables were inadvertently brought into contact with each other while the other ends were connected to a charged battery, or when the positive and negative terminals were connected to the opposite polarity terminals in the vehicle to be jumped, thereby causing a short circuit resulting in sparking and potential damage to batteries and/or bodily injury.

Various attempts to eliminate these problems have been made in the prior art. U.S. Patent No. 6,212,054 issued April 3, 2001, discloses a battery booster pack that is polarity sensitive and can detect proper and improper connections before providing a path for electric current flow. The device uses a set of LEDs connected to optical couplers oriented by a control circuit. The control circuit controls a solenoid assembly controlling the path of power current. The control circuit causes power current to flow through the solenoid assembly only if the points of contact of booster cable clamp connections have been properly made.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

U.S. Patent No. 6,632,103 issued October 14, 2003, discloses an adaptive booster cable connected with two pairs of clips, wherein the two pairs of clips are respectively attached to two batteries to transmit power from one battery to the other battery. The adaptive booster cable includes a polarity detecting unit connected to each clip, a switching unit and a current detecting unit both provided between the two pairs of clips. After the polarity of each clip is sensed by the polarity detecting unit, the switching unit generates a proper connection between the two batteries. Therefore, the positive and negative terminals of the two batteries are correctly connected based on the detected result of the polarity detecting unit.

U.S. Patent No. 8,493,021 issued July 23, 2013, discloses apparatus that monitors the voltage of the battery of a 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. 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. Once the vehicle is started, the unit automatically electrically disconnects from the vehicle's battery.

U.S. Patent No. 5,189,359 issued February 23, 1993, discloses a jumper cable device having two bridge rectifiers for developing a reference voltage, a four-input decoder for determining which terminals are to be connected based on a comparison of

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

the voltage at each of the four terminals to the reference voltage, and a pair of relays for effecting the correct connection depending on the determination of the decoder. No connection will be made unless only one terminal of each battery has a higher voltage than the reference voltage, indicating "positive" terminals, and one has a lower voltage than the reference voltage, indicating "negative" terminals, and that, therefore, the two high voltage terminals may be connected and the two lower voltage terminals may be connected. Current flows once the appropriate relay device is closed. The relay device is preferably a MOSFET combined with a series array of photodiodes that develop MOSFET gate-closing potential when the decoder output causes an LED to light.

U.S. Patent No. 5,795,182 issued August 18, 1998, discloses a polarity independent set of battery jumper cables for jumping a first battery to a second battery. The apparatus includes a relative polarity detector for detecting whether two batteries are configured cross or parallel. A three-position high current capacity crossbar pivot switch is responsive to the relative polarity detector for automatically connecting the plus terminals of the two batteries together and the minus terminals of the two batteries together regardless of whether the configuration detected is cross or parallel, and an undercurrent detector and a delay circuit for returning the device to its ready and unconnected state after the device has been disconnected from one of the batteries. The crossbar pivot switch includes two pairs of contacts, and a pivot arm that pivots about two separate points to ensure full electrical contact between the pairs of contacts. The invention can also be used to produce a battery charger that may be connected to a battery without regard to the polarity of the battery.

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

U.S. Patent No. 6,262,492 issued July 17, 2001, discloses a car battery jumper cable for accurately coupling an effective power source to a failed or not charged battery, which includes a relay switching circuit connected to the power source and the battery by two current conductor pairs. First and second voltage polarity recognition circuits are respectively connected to the power source and the battery by a respective voltage conductor pair to recognize the polarity of the power source and the battery. A logic recognition circuit produces a control signal subject to the polarity of the power source and the battery, and a driving circuit controlled by the control signal from the logic recognition circuit drives the relay switching circuit, enabling the two poles of the power source to be accurately coupled to the two poles of the battery.

U.S. Patent No. 5,635,817 issued June 3, 1997, discloses a vehicle battery charging device that includes a control housing having cables including a current limiting device to prevent exceeding of a predetermined maximum charging current of about 40 to 60 amps. The control housing includes a polarity detecting device to verify the correct polarity of the connection of the terminals of the two batteries and to electrically disconnect the two batteries if there is an incorrect polarity.

U.S. Patent No. 8,199,024 issued June 12, 2012, discloses a safety circuit in a low-voltage connecting system that leaves the two low-voltage systems disconnected until it determines that it is safe to make a connection. When the safety circuit determines that no unsafe conditions exist and that it is safe to connect the two low-voltage systems, the safety circuit may connect the two systems by way of a "soft start" that provides a connection between the two systems over a period of time that reduces or prevents inductive voltage spikes on one or more of the low-voltage systems. When

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one of the low-voltage systems has a completely-discharged battery incorporated into it, a method is used for detection of proper polarity of the connections between the low-voltage systems. The polarity of the discharged battery is determined by passing one or more test currents through it and determining whether a corresponding voltage rise is observed.

U.S. Patent No. 5,793,185 issued August 11, 1998, discloses a hand-held jump starter having control components and circuits to prevent overcharging and incorrect connection to batteries.

While the prior art attempted solutions to the abovementioned problems as discussed above, each of the prior art solutions suffers from other shortcomings, either in complexity, cost or potential for malfunction. Accordingly, there exists a need in the art for further improvements to vehicle jump start devices.

SUMMARY OF THE INVENTION

In accordance with an aspect of the invention, apparatus is provided for jump starting a vehicle engine, including: an internal power supply; an output port having positive and negative polarity outputs; a vehicle battery isolation sensor connected in circuit with said positive and negative polarity outputs, configured to detect presence of a vehicle battery connected between said positive and negative polarity outputs; a reverse polarity sensor connected in circuit with said positive and negative polarity outputs, configured to detect polarity of a vehicle battery connected between said positive and negative polarity outputs; a power FET switch connected between said internal power supply and said output port; and a microcontroller configured to receive input signals from said vehicle isolation sensor and said reverse polarity sensor, and to

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provide an output signal to said power FET switch, such that said power FET switch is turned on to connect said internal power supply to said output port in response to signals from said sensors indicating the presence of a vehicle battery at said output port and proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs.

In accordance with another aspect of the invention, the internal power supply is a rechargeable lithium ion battery pack.

In accordance with yet another aspect of the invention, a jumper cable device is provided, having a plug configured to plug into an output port of a handheld battery charger booster device having an internal power supply; a pair of cables integrated with the plug at one respective end thereof; said pair of cables being configured to be separately connected to terminals of a battery at another respective end thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a functional block diagram of a handheld vehicle battery boost apparatus in accordance with one aspect of the present invention;

Figs. 2A - 2C are schematic circuit diagrams of an example embodiment of a handheld vehicle battery boost apparatus in accordance with an aspect of the invention;

Fig. 3 is a perspective view of a handheld jump starter booster device in accordance with one example embodiment of the invention; and

Fig. 4 is a plan view of a jumper cable usable with the handheld jump starter booster device in accordance with another aspect of the invention.

DETAILED DESCRIPTION OF THE INVENTION

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FIG. 1 is a functional block diagram of a handheld battery booster according to one aspect of the invention. At the heart of the handheld battery booster is a lithium polymer battery pack 32, which stores sufficient energy to jump start a vehicle engine served by a conventional 12 volt lead-acid or valve regulated lead-acid battery. In one example embodiment, a high-surge lithium polymer battery pack includes three 3.7V, 2666 mAh lithium polymer batteries in a 3S1P configuration. The resulting battery pack provides 11.1V, 2666Ah (8000Ah at 3.7V, 29.6Wh). Continuous discharge current is 25C (or 200 amps), and burst discharge current is 50C (or 400 amps). The maximum charging current of the battery pack is 8000mA (8 amps).

A programmable microcontroller unit (MCU) 1 receives various inputs and produces informational as well as control outputs. The programmable MCU 1 further provides flexibility to the system by allowing updates in functionality and system parameters, without requiring any change in hardware. According to one example embodiment, an 8 bit microcontroller with 2K x 15 bits of flash memory is used to control the system. One such microcontroller is the HT67F30, which is commercially available from Holtek Semiconductor Inc.

A car battery reverse sensor 10 monitors the polarity of the vehicle battery 72 when the handheld battery booster device is connected to the vehicle's electric system. As explained below, the booster device prevents the lithium battery pack from being connected to the vehicle battery 72 when the terminals of the battery 72 are connected to the wrong terminals of the booster device. A battery presence sensor (e.g. car battery isolation sensor 12) detects whether or not a vehicle battery 72 is present and connected to the booster device, and prevents the lithium battery pack from being

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connected to the output terminals of the booster device unless there is a good (e.g. chargeable) battery present and connected to the output terminals.

A smart switch FET circuit 15 electrically switches the handheld battery booster lithium battery to the vehicle's electric system only when the vehicle battery is determined by the MCU 1 to be present (in response to a detection signal provided by isolation sensor 12) and connected with the correct polarity (in response to a detection signal provided by reverse sensor 10). A lithium battery temperature sensor 20 monitors the temperature of the lithium battery pack 32 to detect overheating due to high ambient temperature conditions and overextended current draw during jump starting. A lithium battery voltage measurement circuit 24 monitors the voltage of the lithium battery pack 32 to prevent the voltage potential from rising too high during a charging operation and from dropping too low during a discharge operation.

Lithium battery back-charge protection diodes 28 prevent any charge current being delivered to the vehicle battery 72 from flowing back to the lithium battery pack 32 from the vehicle's electrical system. Flashlight LED circuit 36 is provided to furnish a flashlight function for enhancing light under a vehicle's hood in dark conditions, as well as providing SOS and strobe lighting functions for safety purposes when a vehicle may be disabled in a potentially dangerous location. Voltage regulator 42 provides regulation of internal operating voltage for the microcontroller and sensors. On/Off manual mode and flashlight switches 46 allow the user to control power-on for the handheld battery booster device, to control manual override operation if the vehicle has no battery, and to control the flashlight function. The manual button functions only when the booster device is powered on. This button allows the user to jump-start vehicles that have either

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a missing battery, or the battery voltage is so low that automatic detection by the MCU is not possible. When the user presses and holds the manual override button for a predetermined period time (such as three seconds) to prevent inadvertent actuation of the manual mode, the internal lithium ion battery power is switched to the vehicle battery connect port. The only exception to the manual override is if the car battery is connected in reverse. If the car battery is connected in reverse, the internal lithium battery power shall never be switched to the vehicle battery connect port.

USB charge circuit 52 converts power from any USB charger power source, charge voltage and current for charging the lithium battery pack 32. USB output 56 provides a USB portable charger for charging smartphones, tablets, and other rechargeable electronic devices. Operation indicator LEDs 60 provide visual indication of lithium battery capacity status as well as an indication of smart switch activation status (indicating that power is being provided to the vehicle's electrical system).

Detailed operation of the handheld booster device will now be described with reference to the schematic diagrams of Figs. 2A - 2C. As shown in Fig. 2A, the microcontroller unit 1 is the center of all inputs and outputs. The reverse battery sensor 10 comprises an optically coupled isolator phototransistor (4N27) connected to the terminals of vehicle battery 72 at input pins 1 and 2 with a diode D8 in the lead conductor of pin 1 (associated with the negative terminal CB-), such that if the battery 72 is connected to the terminals of the booster device with the correct polarity, the optocoupler LED 11 will not conduct current, and is therefore turned off, providing a "1" or high output signal to the MCU 1. The car battery isolation sensor 12 comprises an optically coupled isolator phototransistor (4N27) connected to the terminals of vehicle

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battery 72 at input pins 1 and 2 with a diode D7 in the lead conductor of pin 1 (associated with the positive terminal CB+), such that if the battery 72 is connected to the terminals of the booster device with the correct polarity, the optocoupler LED 11A will conduct current, and is therefore turned on, providing a "0" or low output signal to the MCU, indicating the presence of a battery across the jumper output terminals of the handheld booster device.

If the car battery 72 is connected to the handheld booster device with reverse polarity, the optocoupler LED 11 of the reverse sensor 10 will conduct current, providing a "0" or low signal to microcontroller unit 1. Further, if no battery is connected to the handheld booster device, the optocoupler LED 11A of the isolation sensor 12 will not conduct current, and is therefore turned off, providing a "1" or high output signal to the MCU, indicating the absence of any battery connected to the handheld booster device. Using these specific inputs, the microcontroller software of MCU 1 can determine when it is safe to turn on the smart switch FET 15, thereby connecting the lithium battery pack to the jumper terminals of the booster device. Consequently, if the car battery 72 either is not connected to the booster device at all, or is connected with reverse polarity, the MCU 1 can keep the smart switch FET 15 from being turned on, thus prevent sparking/short circuiting of the lithium battery pack.

As shown in Fig. 2B, the FET smart switch 15 is driven by an output of the microcontroller 1. The FET smart switch 15 includes three FETs (Q15, Q18, and Q19) in parallel, which spreads the distribution of power from the lithium battery pack over the FETs. When that microcontroller output is driven to a logic low, FETs 16 are all in a high resistance state, therefore not allowing current to flow from the internal lithium battery

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negative contact 17 to the car battery 72 negative contact. When the micro controller output is driven to a logic high, the FETs 16 (Q15, Q18, and Q19) are in a low resistant state, allowing current to flow freely from the internal lithium battery pack negative contact 17 (LB-) to the car battery 72 negative contact (CB-). In this way, the microcontroller software controls the connection of the internal lithium battery pack 32 to the vehicle battery 72 for jumpstarting the car engine.

Referring back to Fig. 2A, the internal lithium battery pack voltage can be accurately measured using circuit 24 and one of the analog-to-digital inputs of the microcontroller 1. Circuit 24 is designed to sense when the main 3.3V regulator 42 voltage is on, and to turn on transistor 23 when the voltage of regulator 42 is on. When transistor 23 is conducting, it turns on FET 22, thereby providing positive contact (LB+) of the internal lithium battery a conductive path to voltage divider 21 allowing a lower voltage range to be brought to the microcontroller to be read. Using this input, the microcontroller software can determine if the lithium battery voltage is too low during discharge operation or too high during charge operation, and take appropriate action to prevent damage to electronic components.

Still referring to Fig. 2A, the temperature of the internal lithium battery pack 32 can be accurately measured by two negative temperature coefficient (NTC) devices 20. These are devices that reduce their resistance when their temperature rises. The circuit is a voltage divider that brings the result to two analog-to-digital (A/D) inputs on the microcontroller 1. The microcontroller software can then determine when the internal lithium battery is too hot to allow jumpstarting, adding safety to the design.

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The main voltage regulator circuit 42 is designed to convert internal lithium battery voltage to a regulated 3.3 volts that is utilized by the microcontroller 1 as well as by other components of the booster device for internal operating power. Three lithium battery back charge protection diodes 28 (see Fig. 2B) are in place to allow current to flow only from the internal lithium battery pack 32 to the car battery 72, and not from the car battery to the internal lithium battery. In this way, if the car electrical system is charging from its alternator, it cannot back-charge (and thereby damage) the internal lithium battery, providing another level of safety. The main power on switch 46 (Fig. 2A) is a combination that allows for double pole, double throw operation so that with one push, the product can be turned on if it is in the off state, or turned off if it is in the on state. This circuit also uses a microcontroller output 47 to "keep alive" the power when it is activated by the on switch. When the switch is pressed the microcontroller turns this output to a high logic level to keep power on when the switch is released. In this way, the microcontroller maintains control of when the power is turned off when the on/off switch is activated again or when the lithium battery voltage is getting too low. The microcontroller software also includes a timer that turns the power off after a predefined period of time, (such as, e.g. 8 hours) if not used.

The flashlight LED circuit 45 shown in Fig. 2B controls the operation of flashlight LEDs. Two outputs from the microcontroller 1 are dedicated to two separate LEDs. Thus, the LEDs can be independently software-controlled for strobe and SOS patterns, providing yet another safety feature to the booster device. LED indicators provide the feedback the operator needs to understand what is happening with the product. Four separate LEDs 61 (Fig. 2A) are controlled by corresponding individual outputs of

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microcontroller 1 to provide indication of the remaining capacity of the internal lithium battery. These LEDs are controlled in a "fuel gauge" type format with 25%, 50% 75% and 100% (red, red, yellow, green) capacity indications. An LED indicator 63 (Fig. 2B) provides a visual warning to the user when the vehicle battery 72 has been connected in reverse polarity. "Boost" and on/off LEDs 62 provide visual indications when the booster device is provide jump-start power, and when the booster device is turned on, respectively.

A USB output 56 circuit (Fig. 2C) is included to provide a USB output for charging portable electronic devices such as smartphones from the internal lithium battery pack 32. Control circuit 57 from the microcontroller 1 allows the USB Out 56 to be turned on and off by software control to prevent the internal lithium battery getting too low in capacity. The USB output is brought to the outside of the device on a standard USB connector 58, which includes the standard voltage divider required for enabling charge to certain smartphones that require it. The USB charge circuit 52 allows the internal lithium battery pack 32 to be charged using a standard USB charger. This charge input uses a standard micro-USB connector 48 allowing standard cables to be used. The 5V potential provided from standard USB chargers is up-converted to the 12.4VDC voltage required for charging the internal lithium battery pack using a DC-DC converter 49. The DC-DC converter 49 can be turned on and off via circuit 53 by an output from the microcontroller 1.

In this way, the microcontroller software can turn the charge off if the battery voltage is measured to be too high by the A/D input 22. Additional safety is provided for helping to eliminate overcharge to the internal lithium battery using a lithium battery

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charge controller 50 that provides charge balance to the internal lithium battery cells 51. This controller also provides safety redundancy for eliminating over discharge of the internal lithium battery.

Fig. 3 is a perspective view of a handheld device 300 in accordance with an exemplary embodiment of the invention. 301 is a power on switch, 302 shows the LED "fuel gauge" indicators 61. 303 shows a 12 volt output port connectable to a cable device 400, described further below. 304 shows a flashlight control switch for activating flashlight LEDs 45. 305 is a USB input port for charging the internal lithium battery, and 306 is a USB output port for providing charge from the lithium battery to other portable devices such as smartphones, tablets, music players, etc. 307 is a "boost on" indicator showing that power is being provided to the 12V output port. 308 is a "reverse" indicator showing that the vehicle battery is improperly connected with respect to polarity. 309 is a "power on" indicator showing that the device is powered up for operation.

Fig. 4 shows a jumper cable device 400 specifically designed for use with the handheld device 300. Device 400 has a plug 401 configured to plug into 12 volt output port 303 of the handheld device 300. A pair of cables 402a and 402b are integrated with the plug 401, and are respectively connected to the positive and negative polarity battery terminal connectors (e.g. battery terminal clamps 403a and 403b) via ring terminals 404a and 404b. The output port 303 and plug 401 may be dimensioned so that the plug 401 will only fit into the output port 303 in a specific orientation, thus ensuring that clamp 403a will correspond to positive polarity and clamp 403b will correspond to negative polarity, as indicated thereon. Additionally, the ring terminals 404a and 404b may be disconnected from the clamps and connected directly to the

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terminals of a vehicle battery. This feature may be useful, for example, to permanently attach the cables 302a-302b to the battery of a vehicle. In the event that the battery voltage of the vehicle battery becomes depleted, the handheld booster device 300 can be properly connected to the battery very simply by plugging the plug 401 into the output port 303 of the handheld booster device 300 and connecting the battery clamps 403a and 403b to the battery. The plug 401 provides both positive polarity and negative polarity electrical connections between the output port 303 of the handheld battery charger booster device 300 and the plug 401 of the jumper cable device 400. The plug 401 does not have any exposed prongs, as shown in FIG. 5. Further, the individual cables of the pair of cables at one end are connected together (left side in FIG. 5) and integrated with the plug, and the individual cables at the opposite ends are separated apart (right side in FIG. 5). The plug 401 (FIG. 4) comprises a plug body 401a having a uniform or substantially uniform width W along the length of the plug body 401a, as shown in FIG. 4. The plug body 401a of the plug 401 is provided with a surface protrusion 401b (e.g. X-shaped surface protrusion) extending above the outer surface of the plug body 401a of the plug 401. The plug body 401a is a continuous plug body along the length and width of the plug body, and rectangular-shaped. A downwardly tapering transition 402 is provided between the plug body 401a and the pair of cables 402a and 402b. The downwardly tapering transition 402 is provided with transverse ridges. The plug 401 is a single plug having a single connection end or single prong (left end in FIG. 4) provided with a flat end 401c, as shown, and configured to fit into the output port 303 of the handheld booster device 300.

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The invention having been thus described, it will be apparent to those skilled in the art that the same may be varied in many ways without departing from the spirit or scope of the invention. Any and all such variations are intended to be encompassed within the scope of the following claims.

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Electronic Acknowledgement Receipt

EFS ID:	44480308
Application Number:	16450422
International Application Number:	
Confirmation Number:	1008
Title of Invention:	PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF
First Named Inventor/Applicant Name:	Jonathan Lewis Nook
Customer Number:	20230
Filer:	William Leonard Klima/Lisa Elliott
Filer Authorized By:	William Leonard Klima
Attorney Docket Number:	054985-000055-US-05
Receipt Date:	09-DEC-2021
Filing Date:	24-JUN-2019
Time Stamp:	18:00:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment after Notice of Allowance (Rule 312)	AmendmentAfterAllowance.pdf	229402 4af540b5e4d4a88e630db9f22d2a24298cced90e	no	20

Warnings:

Information:					
2	Specification	SubSpec_clean.pdf	126644 3a4a52bf9e7d5d7f411928c93b45eb8294370e67	no	16
Warnings:					
Information:					
		Total Files Size (in bytes):	356046		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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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 AFTER ALLOWANCE

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

Dear Commissioner:

This paper is submitted in response to the Notice of Allowance mailed on November 24, 2021. Accordingly, this paper is timely filed.

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Amendments to the specification:

Please enter the sixteen (16) pages of a Substitute Specification attached hereto. A marked-up up copy of the Substitute Specification, consisting of sixteen (16) pages, showing the changes to the specification, is also attached.

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Remarks

The substitute specification filed herein is to replace the previously filed amendments to the specification filed on March 6, 2020, per discussion with the USPTO. The amendments to the specification as filed on March 6, 2020, were incomplete and missing words and phrases.

The specification is amended above to provide literal support in the specification for the claimed term "battery presence sensor." The original specification describes "smart switch FET circuit 15 electrically switches the handheld battery booster lithium battery to the vehicle's electric system only when the vehicle battery is determined by the MCU 1 to be present (in response to a detection signal provided by isolation sensor 12) and connected with the correct polarity (in response to a detection signal provided by reverse sensor 10) at page 7, lines 13-16. Further, original claim 1 describes a sensor (e.g. vehicle battery isolation sensor) configured to detect presence of the battery (i.e. battery presence sensor).

The term "battery presence sensor" more clearly sets forth the particular sensor for detecting the presence of the depleted or discharged battery to be boosted or charged by the jump starting apparatus or device.

The specification is further amended to provided literal support in the specification for the claimed terms "positive polarity battery terminal connector," "negative polarity battery terminal connector," and "positive and negative polarity battery terminal connectors."

Accordingly, entry of the amendment is respectfully requested.

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Conclusion

The Examiner is welcomed to telephone the undersigned attorney with any questions or comments.

Please charge any fee deficiency or credit any overpayment to Deposit Account No. 22-0585.

Respectfully submitted,

VORYS, SATER, SEYMOUR and PEASE LLP

/William L. Klima/
William L. Klima, Registration No.: 32422
Customer No.: 20230

Date: December 9, 2021

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PORTABLE VEHICLE BATTERY JUMP START APPARATUS WITH SAFETY PROTECTION AND JUMPER CABLE DEVICE THEREOF

BACKGROUND OF THE INVENTION

The present invention relates generally to apparatus for jump-starting a vehicle having a depleted or discharged battery. Prior art devices are known, which provide either a pair of electrical connector cables that connect a fully-charged battery of another vehicle to the engine start circuit of the dead battery vehicle, or portable booster devices which include a fully-charged battery which can be connected in circuit with the vehicle's engine starter through a pair of cables.

Problems with the prior art arose when either the jumper terminals or clamps of the cables were inadvertently brought into contact with each other while the other ends were connected to a charged battery, or when the positive and negative terminals were connected to the opposite polarity terminals in the vehicle to be jumped, thereby causing a short circuit resulting in sparking and potential damage to batteries and/or bodily injury.

Various attempts to eliminate these problems have been made in the prior art. U.S. Patent No. 6,212,054 issued April 3, 2001, discloses a battery booster pack that is polarity sensitive and can detect proper and improper connections before providing a path for electric current flow. The device uses a set of LEDs connected to optical couplers oriented by a control circuit. The control circuit controls a solenoid assembly controlling the path of power current. The control circuit causes power current to flow through the solenoid assembly only if the points of contact of booster cable clamp connections have been properly made.

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U.S. Patent No. 6,632,103 issued October 14, 2003, discloses an adaptive booster cable connected with two pairs of clips, wherein the two pairs of clips are respectively attached to two batteries to transmit power from one battery to the other battery. The adaptive booster cable includes a polarity detecting unit connected to each clip, a switching unit and a current detecting unit both provided between the two pairs of clips. After the polarity of each clip is sensed by the polarity detecting unit, the switching unit generates a proper connection between the two batteries. Therefore, the positive and negative terminals of the two batteries are correctly connected based on the detected result of the polarity detecting unit.

U.S. Patent No. 8,493,021 issued July 23, 2013, discloses apparatus that monitors the voltage of the battery of a 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. 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. Once the vehicle is started, the unit automatically electrically disconnects from the vehicle's battery.

U.S. Patent No. 5,189,359 issued February 23, 1993, discloses a jumper cable device having two bridge rectifiers for developing a reference voltage, a four-input decoder for determining which terminals are to be connected based on a comparison of

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the voltage at each of the four terminals to the reference voltage, and a pair of relays for effecting the correct connection depending on the determination of the decoder. No connection will be made unless only one terminal of each battery has a higher voltage than the reference voltage, indicating "positive" terminals, and one has a lower voltage than the reference voltage, indicating "negative" terminals, and that, therefore, the two high voltage terminals may be connected and the two lower voltage terminals may be connected. Current flows once the appropriate relay device is closed. The relay device is preferably a MOSFET combined with a series array of photodiodes that develop MOSFET gate-closing potential when the decoder output causes an LED to light.

U.S. Patent No. 5,795,182 issued August 18, 1998, discloses a polarity independent set of battery jumper cables for jumping a first battery to a second battery. The apparatus includes a relative polarity detector for detecting whether two batteries are configured cross or parallel. A three-position high current capacity crossbar pivot switch is responsive to the relative polarity detector for automatically connecting the plus terminals of the two batteries together and the minus terminals of the two batteries together regardless of whether the configuration detected is cross or parallel, and an undercurrent detector and a delay circuit for returning the device to its ready and unconnected state after the device has been disconnected from one of the batteries. The crossbar pivot switch includes two pairs of contacts, and a pivot arm that pivots about two separate points to ensure full electrical contact between the pairs of contacts. The invention can also be used to produce a battery charger that may be connected to a battery without regard to the polarity of the battery.

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U.S. Patent No. 6,262,492 issued July 17, 2001, discloses a car battery jumper cable for accurately coupling an effective power source to a failed or not charged battery, which includes a relay switching circuit connected to the power source and the battery by two current conductor pairs. First and second voltage polarity recognition circuits are respectively connected to the power source and the battery by a respective voltage conductor pair to recognize the polarity of the power source and the battery. A logic recognition circuit produces a control signal subject to the polarity of the power source and the battery, and a driving circuit controlled by the control signal from the logic recognition circuit drives the relay switching circuit, enabling the two poles of the power source to be accurately coupled to the two poles of the battery.

U.S. Patent No. 5,635,817 issued June 3, 1997, discloses a vehicle battery charging device that includes a control housing having cables including a current limiting device to prevent exceeding of a predetermined maximum charging current of about 40 to 60 amps. The control housing includes a polarity detecting device to verify the correct polarity of the connection of the terminals of the two batteries and to electrically disconnect the two batteries if there is an incorrect polarity.

U.S. Patent No. 8,199,024 issued June 12, 2012, discloses a safety circuit in a low-voltage connecting system that leaves the two low-voltage systems disconnected until it determines that it is safe to make a connection. When the safety circuit determines that no unsafe conditions exist and that it is safe to connect the two low-voltage systems, the safety circuit may connect the two systems by way of a "soft start" that provides a connection between the two systems over a period of time that reduces or prevents inductive voltage spikes on one or more of the low-voltage systems. When

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one of the low-voltage systems has a completely-discharged battery incorporated into it, a method is used for detection of proper polarity of the connections between the low-voltage systems. The polarity of the discharged battery is determined by passing one or more test currents through it and determining whether a corresponding voltage rise is observed.

U.S. Patent No. 5,793,185 issued August 11, 1998, discloses a hand-held jump starter having control components and circuits to prevent overcharging and incorrect connection to batteries.

While the prior art attempted solutions to the abovementioned problems as discussed above, each of the prior art solutions suffers from other shortcomings, either in complexity, cost or potential for malfunction. Accordingly, there exists a need in the art for further improvements to vehicle jump start devices.

SUMMARY OF THE INVENTION

In accordance with an aspect of the invention, apparatus is provided for jump starting a vehicle engine, including: an internal power supply; an output port having positive and negative polarity outputs; a vehicle battery isolation sensor connected in circuit with said positive and negative polarity outputs, configured to detect presence of a vehicle battery connected between said positive and negative polarity outputs; a reverse polarity sensor connected in circuit with said positive and negative polarity outputs, configured to detect polarity of a vehicle battery connected between said positive and negative polarity outputs; a power FET switch connected between said internal power supply and said output port; and a microcontroller configured to receive input signals from said vehicle isolation sensor and said reverse polarity sensor, and to

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provide an output signal to said power FET switch, such that said power FET switch is turned on to connect said internal power supply to said output port in response to signals from said sensors indicating the presence of a vehicle battery at said output port and proper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs.

In accordance with another aspect of the invention, the internal power supply is a rechargeable lithium ion battery pack.

In accordance with yet another aspect of the invention, a jumper cable device is provided, having a plug configured to plug into an output port of a handheld battery charger booster device having an internal power supply; a pair of cables integrated with the plug at one respective end thereof; said pair of cables being configured to be separately connected to terminals of a battery at another respective end thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a functional block diagram of a handheld vehicle battery boost apparatus in accordance with one aspect of the present invention;

Figs. 2A - 2C are schematic circuit diagrams of an example embodiment of a handheld vehicle battery boost apparatus in accordance with an aspect of the invention;

Fig. 3 is a perspective view of a handheld jump starter booster device in accordance with one example embodiment of the invention; and

Fig. 4 is a plan view of a jumper cable usable with the handheld jump starter booster device in accordance with another aspect of the invention.

DETAILED DESCRIPTION OF THE INVENTION

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FIG. 1 is a functional block diagram of a handheld battery booster according to one aspect of the invention. At the heart of the handheld battery booster is a lithium polymer battery pack 32, which stores sufficient energy to jump start a vehicle engine served by a conventional 12 volt lead-acid or valve regulated lead-acid battery. In one example embodiment, a high-surge lithium polymer battery pack includes three 3.7V, 2666 mAh lithium polymer batteries in a 3S1P configuration. The resulting battery pack provides 11.1V, 2666Ah (8000Ah at 3.7V, 29.6Wh). Continuous discharge current is 25C (or 200 amps), and burst discharge current is 50C (or 400 amps). The maximum charging current of the battery pack is 8000mA (8 amps).

A programmable microcontroller unit (MCU) 1 receives various inputs and produces informational as well as control outputs. The programmable MCU 1 further provides flexibility to the system by allowing updates in functionality and system parameters, without requiring any change in hardware. According to one example embodiment, an 8 bit microcontroller with 2K x 15 bits of flash memory is used to control the system. One such microcontroller is the HT67F30, which is commercially available from Holtek Semiconductor Inc.

A car battery reverse sensor 10 monitors the polarity of the vehicle battery 72 when the handheld battery booster device is connected to the vehicle's electric system. As explained below, the booster device prevents the lithium battery pack from being connected to the vehicle battery 72 when the terminals of the battery 72 are connected to the wrong terminals of the booster device. A battery presence sensor (e.g. car battery isolation sensor 12) detects whether or not a vehicle battery 72 is present and connected to the booster device, and prevents the lithium battery pack from being

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connected to the output terminals of the booster device unless there is a good (e.g. chargeable) battery present and connected to the output terminals.

A smart switch FET circuit 15 electrically switches the handheld battery booster lithium battery to the vehicle's electric system only when the vehicle battery is determined by the MCU 1 to be present (in response to a detection signal provided by isolation sensor 12) and connected with the correct polarity (in response to a detection signal provided by reverse sensor 10). A lithium battery temperature sensor 20 monitors the temperature of the lithium battery pack 32 to detect overheating due to high ambient temperature conditions and overextended current draw during jump starting. A lithium battery voltage measurement circuit 24 monitors the voltage of the lithium battery pack 32 to prevent the voltage potential from rising too high during a charging operation and from dropping too low during a discharge operation.

Lithium battery back-charge protection diodes 28 prevent any charge current being delivered to the vehicle battery 72 from flowing back to the lithium battery pack 32 from the vehicle's electrical system. Flashlight LED circuit 36 is provided to furnish a flashlight function for enhancing light under a vehicle's hood in dark conditions, as well as providing SOS and strobe lighting functions for safety purposes when a vehicle may be disabled in a potentially dangerous location. Voltage regulator 42 provides regulation of internal operating voltage for the microcontroller and sensors. On/Off manual mode and flashlight switches 46 allow the user to control power-on for the handheld battery booster device, to control manual override operation if the vehicle has no battery, and to control the flashlight function. The manual button functions only when the booster device is powered on. This button allows the user to jump-start vehicles that have either

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a missing battery, or the battery voltage is so low that automatic detection by the MCU is not possible. When the user presses and holds the manual override button for a predetermined period time (such as three seconds) to prevent inadvertent actuation of the manual mode, the internal lithium ion battery power is switched to the vehicle battery connect port. The only exception to the manual override is if the car battery is connected in reverse. If the car battery is connected in reverse, the internal lithium battery power shall never be switched to the vehicle battery connect port.

USB charge circuit 52 converts power from any USB charger power source, charge voltage and current for charging the lithium battery pack 32. USB output 56 provides a USB portable charger for charging smartphones, tablets, and other rechargeable electronic devices. Operation indicator LEDs 60 provide visual indication of lithium battery capacity status as well as an indication of smart switch activation status (indicating that power is being provided to the vehicle's electrical system).

Detailed operation of the handheld booster device will now be described with reference to the schematic diagrams of Figs. 2A - 2C. As shown in Fig. 2A, the microcontroller unit 1 is the center of all inputs and outputs. The reverse battery sensor 10 comprises an optically coupled isolator phototransistor (4N27) connected to the terminals of vehicle battery 72 at input pins 1 and 2 with a diode D8 in the lead conductor of pin 1 (associated with the negative terminal CB-), such that if the battery 72 is connected to the terminals of the booster device with the correct polarity, the optocoupler LED 11 will not conduct current, and is therefore turned off, providing a "1" or high output signal to the MCU 1. The car battery isolation sensor 12 comprises an optically coupled isolator phototransistor (4N27) connected to the terminals of vehicle

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battery 72 at input pins 1 and 2 with a diode D7 in the lead conductor of pin 1 (associated with the positive terminal CB+), such that if the battery 72 is connected to the terminals of the booster device with the correct polarity, the optocoupler LED 11A will conduct current, and is therefore turned on, providing a "0" or low output signal to the MCU, indicating the presence of a battery across the jumper output terminals of the handheld booster device.

If the car battery 72 is connected to the handheld booster device with reverse polarity, the optocoupler LED 11 of the reverse sensor 10 will conduct current, providing a "0" or low signal to microcontroller unit 1. Further, if no battery is connected to the handheld booster device, the optocoupler LED 11A of the isolation sensor 12 will not conduct current, and is therefore turned off, providing a "1" or high output signal to the MCU, indicating the absence of any battery connected to the handheld booster device. Using these specific inputs, the microcontroller software of MCU 1 can determine when it is safe to turn on the smart switch FET 15, thereby connecting the lithium battery pack to the jumper terminals of the booster device. Consequently, if the car battery 72 either is not connected to the booster device at all, or is connected with reverse polarity, the MCU 1 can keep the smart switch FET 15 from being turned on, thus prevent sparking/short circuiting of the lithium battery pack.

As shown in Fig. 2B, the FET smart switch 15 is driven by an output of the microcontroller 1. The FET smart switch 15 includes three FETs (Q15, Q18, and Q19) in parallel, which spreads the distribution of power from the lithium battery pack over the FETs. When that microcontroller output is driven to a logic low, FETs 16 are all in a high resistance state, therefore not allowing current to flow from the internal lithium battery

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negative contact 17 to the car battery 72 negative contact. When the micro controller output is driven to a logic high, the FETs 16 (Q15, Q18, and Q19) are in a low resistant state, allowing current to flow freely from the internal lithium battery pack negative contact 17 (LB-) to the car battery 72 negative contact (CB-). In this way, the microcontroller software controls the connection of the internal lithium battery pack 32 to the vehicle battery 72 for jumpstarting the car engine.

Referring back to Fig. 2A, the internal lithium battery pack voltage can be accurately measured using circuit 24 and one of the analog-to-digital inputs of the microcontroller 1. Circuit 24 is designed to sense when the main 3.3V regulator 42 voltage is on, and to turn on transistor 23 when the voltage of regulator 42 is on. When transistor 23 is conducting, it turns on FET 22, thereby providing positive contact (LB+) of the internal lithium battery a conductive path to voltage divider 21 allowing a lower voltage range to be brought to the microcontroller to be read. Using this input, the microcontroller software can determine if the lithium battery voltage is too low during discharge operation or too high during charge operation, and take appropriate action to prevent damage to electronic components.

Still referring to Fig. 2A, the temperature of the internal lithium battery pack 32 can be accurately measured by two negative temperature coefficient (NTC) devices 20. These are devices that reduce their resistance when their temperature rises. The circuit is a voltage divider that brings the result to two analog-to-digital (A/D) inputs on the microcontroller 1. The microcontroller software can then determine when the internal lithium battery is too hot to allow jumpstarting, adding safety to the design.

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The main voltage regulator circuit 42 is designed to convert internal lithium battery voltage to a regulated 3.3 volts that is utilized by the microcontroller 1 as well as by other components of the booster device for internal operating power. Three lithium battery back charge protection diodes 28 (see Fig. 2B) are in place to allow current to flow only from the internal lithium battery pack 32 to the car battery 72, and not from the car battery to the internal lithium battery. In this way, if the car electrical system is charging from its alternator, it cannot back-charge (and thereby damage) the internal lithium battery, providing another level of safety. The main power on switch 46 (Fig. 2A) is a combination that allows for double pole, double throw operation so that with one push, the product can be turned on if it is in the off state, or turned off if it is in the on state. This circuit also uses a microcontroller output 47 to "keep alive" the power when it is activated by the on switch. When the switch is pressed the microcontroller turns this output to a high logic level to keep power on when the switch is released. In this way, the microcontroller maintains control of when the power is turned off when the on/off switch is activated again or when the lithium battery voltage is getting too low. The microcontroller software also includes a timer that turns the power off after a predefined period of time, (such as, e.g. 8 hours) if not used.

The flashlight LED circuit 45 shown in Fig. 2B controls the operation of flashlight LEDs. Two outputs from the microcontroller 1 are dedicated to two separate LEDs. Thus, the LEDs can be independently software-controlled for strobe and SOS patterns, providing yet another safety feature to the booster device. LED indicators provide the feedback the operator needs to understand what is happening with the product. Four separate LEDs 61 (Fig. 2A) are controlled by corresponding individual outputs of

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microcontroller 1 to provide indication of the remaining capacity of the internal lithium battery. These LEDs are controlled in a "fuel gauge" type format with 25%, 50% 75% and 100% (red, red, yellow, green) capacity indications. An LED indicator 63 (Fig. 2B) provides a visual warning to the user when the vehicle battery 72 has been connected in reverse polarity. "Boost" and on/off LEDs 62 provide visual indications when the booster device is provide jump-start power, and when the booster device is turned on, respectively.

A USB output 56 circuit (Fig. 2C) is included to provide a USB output for charging portable electronic devices such as smartphones from the internal lithium battery pack 32. Control circuit 57 from the microcontroller 1 allows the USB Out 56 to be turned on and off by software control to prevent the internal lithium battery getting too low in capacity. The USB output is brought to the outside of the device on a standard USB connector 58, which includes the standard voltage divider required for enabling charge to certain smartphones that require it. The USB charge circuit 52 allows the internal lithium battery pack 32 to be charged using a standard USB charger. This charge input uses a standard micro-USB connector 48 allowing standard cables to be used. The 5V potential provided from standard USB chargers is up-converted to the 12.4VDC voltage required for charging the internal lithium battery pack using a DC-DC converter 49. The DC-DC converter 49 can be turned on and off via circuit 53 by an output from the microcontroller 1.

In this way, the microcontroller software can turn the charge off if the battery voltage is measured to be too high by the A/D input 22. Additional safety is provided for helping to eliminate overcharge to the internal lithium battery using a lithium battery

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charge controller 50 that provides charge balance to the internal lithium battery cells 51. This controller also provides safety redundancy for eliminating over discharge of the internal lithium battery.

Fig. 3 is a perspective view of a handheld device 300 in accordance with an exemplary embodiment of the invention. 301 is a power on switch, 302 shows the LED "fuel gauge" indicators 61. 303 shows a 12 volt output port connectable to a cable device 400, described further below. 304 shows a flashlight control switch for activating flashlight LEDs 45. 305 is a USB input port for charging the internal lithium battery, and 306 is a USB output port for providing charge from the lithium battery to other portable devices such as smartphones, tablets, music players, etc. 307 is a "boost on" indicator showing that power is being provided to the 12V output port. 308 is a "reverse" indicator showing that the vehicle battery is improperly connected with respect to polarity. 309 is a "power on" indicator showing that the device is powered up for operation.

Fig. 4 shows a jumper cable device 400 specifically designed for use with the handheld device 300. Device 400 has a plug 401 configured to plug into 12 volt output port 303 of the handheld device 300. A pair of cables 402a and 402b are integrated with the plug 401, and are respectively connected to the positive and negative polarity battery terminal connectors (e.g. battery terminal clamps 403a and 403b) via ring terminals 404a and 404b. The output port 303 and plug 401 may be dimensioned so that the plug 401 will only fit into the output port 303 in a specific orientation, thus ensuring that clamp 403a will correspond to positive polarity and clamp 403b will correspond to negative polarity, as indicated thereon. Additionally, the ring terminals 404a and 404b may be disconnected from the clamps and connected directly to the

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terminals of a vehicle battery. This feature may be useful, for example, to permanently attach the cables 302a-302b to the battery of a vehicle. In the event that the battery voltage of the vehicle battery becomes depleted, the handheld booster device 300 can be properly connected to the battery very simply by plugging the plug 401 into the output port 303 of the handheld booster device 300 and connecting the battery clamps 403a and 403b to the battery. The plug 401 provides both positive polarity and negative polarity electrical connections between the output port 303 of the handheld battery charger booster device 300 and the plug 401 of the jumper cable device 400. The plug 401 does not have any exposed prongs, as shown in FIG. 5. Further, the individual cables of the pair of cables at one end are connected together (left side in FIG. 5) and integrated with the plug, and the individual cables at the opposite ends are separated apart (right side in FIG. 5). The plug 401 (FIG. 4) comprises a plug body 401a having a uniform or substantially uniform width W along the length of the plug body 401a, as shown in FIG. 4. The plug body 401a of the plug 401 is provided with a surface protrusion 401b (e.g. X-shaped surface protrusion) extending above the outer surface of the plug body 401a of the plug 401. The plug body 401a is a continuous plug body along the length and width of the plug body, and rectangular-shaped. A downwardly tapering transition 402 is provided between the plug body 401a and the pair of cables 402a and 402b. The downwardly tapering transition 402 is provided with transverse ridges. The plug 401 is a single plug having a single connection end or single prong (left end in FIG. 4) provided with a flat end 401c, as shown, and configured to fit into the output port 303 of the handheld booster device 300.

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The invention having been thus described, it will be apparent to those skilled in the art that the same may be varied in many ways without departing from the spirit or scope of the invention. Any and all such variations are intended to be encompassed within the scope of the following claims.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/450,422	06/24/2019	Jonathan Lewis Nook	054985-000055-US-05	1008

20230 7590 12/17/2021

Vorys, Sater, Seymour and Pease LLP
1909 K St., NW
9th Floor
Washington, DC 20006-1152

EXAMINER
DIAO, M BAYE

ART UNIT	PAPER NUMBER
2859	

NOTIFICATION DATE	DELIVERY MODE
12/17/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patlaw@vorys.com

Response to Rule 312 Communication	Application No.	Applicant(s)	
	16/450,422	Nook et al.	
	Examiner	Art Unit	AIA (FITF) Status
	M'BAYE DIAO	2859	Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ The amendment filed on 09 December 2021 under 37 CFR 1.312 has been considered, and has been:

a) ☑ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

/M BAYE DIAO/ Primary Examiner, Art Unit 2859	See attached RUSH of 11/30/2021

EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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 AFTER ALLOWANCE

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

Dear Commissioner:

This paper is submitted in response to the Notice of Allowance mailed on November 24, 2021. Accordingly, this paper is timely filed.

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Petitioner ADC (IPR2024-00577)

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	16450422	Filing Date	2019-06-24	Docket Number (if applicable)	054985-000055-US-05	Art Unit	2859
First Named Inventor	NOOK			Examiner Name	DIAO		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 220585

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

X Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
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Signature of Registered U.S. Patent Practitioner			
Signature	/William L. Klima/	Date (YYYY-MM-DD)	2022-02-24
Name	William L. Klima	Registration Number	32422

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Petitioner ADC (IPR2024-00577)

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	16450422
Filing Date	2019-06-24
First Named Inventor	NOOK
Art Unit	2859
Examiner Name	DIAO
Attorney Docket Number	054985-000055-US-05

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	2	20120187897	A1	2012-07-26	LENK et al.	

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	Application Number	16450422
	Filing Date	2019-06-24
	First Named Inventor	NOOK
	Art Unit	2859
	Examiner Name	DIAO
	Attorney Docket Number	054985-000055-US-05

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Copy of Australian Office Action for AU Patent Application No.: AU2020201224, mailed October 26, 2021.	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Application Number	16450422
	Filing Date	2019-06-24
	First Named Inventor	NOOK
	Art Unit	2859
	Examiner Name	DIAO
	Attorney Docket Number	054985-000055-US-05

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/William L. Klima/	Date (YYYY-MM-DD)	2022-02-24
Name/Print	William L. Klima	Registration Number	32422

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EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

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最終頁に続く

(54)【考案の名称】車両用補助給電装置

(57)【要約】　(修正有)
【課題】ジャンプスタータとポータブル電源としての機能を有し、小型軽量で携帯性に優れ、使い勝手のよい車両用補助給電装置を提供する。
【解決手段】内部接続された充電回路部、リチウムイオン蓄電池、出力回路部、制御回路部を筐体内に備え、制御回路部は、ＤＣ出力端子に給電されると充電回路部の動作を制御して、リチウムイオン蓄電池を充電する。制御回路部は、リチウムイオン蓄電池から、第１のＤＣ出力端子に外部接続される車両バッテリにジャンプスタート用の電源を供給し、第２のＤＣ出力端子に外部接続されるＰＣにＰＣ駆動用の電源を供給し、第３のＤＣ出力端子３３に外部接続されるＵＳＢ機器にＵＳＢ機器駆動用の電源を供給し、第４のＤＣ出力端子３４に外部接続される外部機器に外部機器駆動用の電源を供給するように出力回路部の動作を制御する。
【選択図】図１

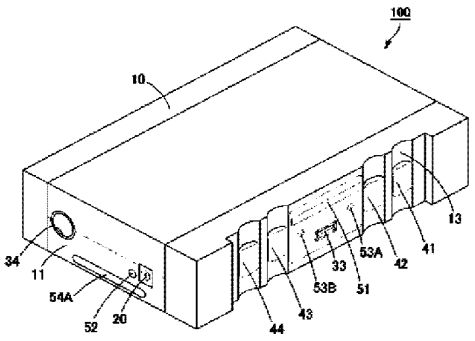


EXHIBIT 1002
Petitioner ADC (IPR2024-00577)

【実用新案登録請求の範囲】
【請求項１】
筐体と、
上記筐体の側壁に設置され、充電用の給電ケーブルがＤＣプラグを介して外部接続されるＤＣジャックからなるＤＣ入力端子と、
上記筐体内に設置され、上記ＤＣ入力端子に内部接続された充電回路部と、
上記筐体内に設置され、上記充電回路部に内部接続されたリチウムイオン蓄電池と、
上記筐体内に設置され、上記リチウムイオン蓄電池に内部接続された出力回路部と、
上記筐体内に設置され、上記充電回路部及び出力回路部の動作を制御する制御回路部と、
上記筐体の側壁に設置され、上記出力回路部に内部接続されており、ブースタケーブルがプラグを介して外部接続されるジャックからなるジャンプスタート用の第１のＤＣ出力端子と、
上記筐体の側壁に設置され、上記出力回路部に内部接続されており、ＰＣ電源ケーブルがプラグを介して外部接続されるジャックからなるＰＣ電源用の第２のＤＣ出力端子と、
上記筐体の正面壁に設置され、上記出力回路部に内部接続されており、ＵＳＢケーブルがＵＳＢプラグを介して外部接続されるＵＳＢソケットからなる第３のＤＣ出力端子と、
上記筐体の背面壁に設置され、上記出力回路部に内部接続されており、外部電源ケーブルがシガープラグを介して外部接続されるシガーソケットからなる第４のＤＣ出力端子と、
上記筐体の正面壁に設置され、上記制御回路部に内部接続された電源スイッチ、ジャンプスタートスイッチと、
上記筐体の正面壁に設置され、上記制御回路部により制御されて上記リチウムイオン蓄電池の充電量をレベルバー表示する充電量表示部と
を備え、
上記制御回路部は、上記リチウムイオン蓄電池の充電量を監視し、上記充電量を上記充電量表示部によりレベルバー表示させる制御を行うとともに、
上記制御回路部は、上記第１のＤＣ出力端子にブースタケーブルを介して車両バッテリが外部接続され、上記電源スイッチがＯＮされた状態で、上記ジャンプスタートスイッチの操作入力を受け付けることにより、上記出力回路部から上記第１のＤＣ出力端子を介してジャンプスタート用の電源を供給する制御を行い、上記第２のＤＣ出力端子にＰＣ電源ケーブルを介してＰＣが外部接続された状態で、上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第２のＤＣ出力端子を介してＰＣ駆動用の電源を供給する制御を行い、上記第３のＤＣ出力端子にＵＳＢケーブルを介してＵＳＢ機器が外部接続された状態で、上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第３のＤＣ出力端子を介してＵＳＢ機器駆動用の電源を供給する制御を行い、上記第４のＤＣ出力端子に外部電源ケーブルを介して外部機器が外部接続された状態で、上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第４のＤＣ出力端子を介して外部機器駆動用の電源を供給する制御を行うことを特徴とする車両用補助給電装置。
【請求項２】
上記ＤＣ入力端子には、一端にＡＣアダプタ又はシガーソケットを備えた上記充電用の給電ケーブルを介して給電され、
上記制御回路部は、上記ＤＣ入力端子に上記充電用の給電ケーブルを介して給電された状態を検出すると、上記充電回路部を介して上記リチウムイオン蓄電池を充電する制御を行い、充電制御中は、上記出力回路部から外部への電源供給を禁止する制御を行うことを特徴とする請求項１記載の車両用補助給電装置。
【請求項３】
上記制御回路部は、上記電源スイッチの操作による電源ＯＮを検知して上記充電量表示部の動作を制御し、電源ＯＮを表示するパワーランプとして上記充電量表示部を機能させ

、この電源ＯＮ状態で上記ジャンプスタートスイッチの短時間操作によるジャンプスタートを検知してジャンプスタートモードの制御を行い、このジャンプスタートモードの制御において、上記第１のＤＣ出力端子に外部接続されたブースタケーブルを介してジャンプスタートさせる自動車の車載バッテリの電圧を正常に検知できた場合に、上記出力回路部の動作を制御し、上記リチウムイオン蓄電池をジャンプスタート用の電源として上記出力回路部を介して上記第１のＤＣ出力端子に接続するとともに、上記充電量表示部の動作を制御し、ジャンプスタートを表示するジャンプスタートランプとして上記充電量表示部を機能させることを特徴とする請求項１又は請求項２の何れか１項記載の車両用補助給電装置。

【請求項４】

上記制御回路部は、上記電源ＯＮ状態で上記ジャンプスタートスイッチが長時間操作されたことを検知してチャージブーストモードの制御を行い、このジャンプスタートモードの制御において、上記第１のＤＣ出力端子に外部接続されたブースタケーブルを介してジャンプスタートさせる自動車の車載バッテリの電圧を正常に検知できた場合に、上記出力回路部の動作を制御し、上記リチウムイオン蓄電池をチャージブースト用の電源として上記出力回路部を介して上記第１のＤＣ出力端子に接続するとともに、上記充電量表示部の動作を制御し、チャージブーストを表示するチャージブーストランプとして上記充電量表示部を機能させることを特徴とする請求項３記載の車両用補助給電装置。

【請求項５】

上記充電量表示部は、上記制御回路部により制御されて上記リチウムイオン蓄電池の充電量を発光色の変化とともにレベルバー表示する直線上に配置された複数個の発光素子からなり、

上記制御回路部は、上記複数個の発光素子の１つを第１の発光色で点灯させることにより、上記電源ＯＮを表示するパワーランプとして上記充電量表示部を機能させ、

上記複数個の発光素子の他の１つを第２の発光色で点灯させることにより、上記ジャンプスタートを表示するジャンプスタートランプ又は上記チャージブーストを表示するチャージブーストランプとして上記充電量表示部を機能させることを特徴とする請求項４記載の車両用補助給電装置。

【請求項６】

上記第４のＤＣ出力端子に上記外部電源ケーブルを介して外部機器として車両のＯＢＤ（On-Board Diagnostic system）システムが外部接続された状態で、上記制御回路部が上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第４のＤＣ出力端子を介して外部機器駆動用の電源として、上記ＯＢＤのメモリバックアップ用の電源供給を行うことを特徴とする請求項１乃至５項いずれか１項に記載の車両用補助給電装置。

【請求項７】

上記リチウムイオン蓄電池として上記筐体内に設置した複数個の充電式リチウムイオン電池を備えることを特徴とする請求項７項記載の車両用補助給電装置。

【請求項８】

上記筐体内に３．６Ｖの充電式リチウムイオンを３個実装することにより、重さ８３０ｇ程度で１２Ｖ／４．５Ａｈの容量のジャンプスタータとして機能させることを特徴とする請求項７項記載の車両用補助給電装置。

【請求項９】

上記筐体内に３．６Ｖの充電式リチウムイオンを６個実装することにより、重さ１３００ｇ程度で１２Ｖ／９Ａｈの容量のジャンプスタータとして機能させることを特徴とする請求項７項記載の車両用補助給電装置。

【考案の詳細な説明】

【技術分野】

【０００１】

本考案は、車両のバッテリが上がった場合に、車載バッテリに接続されて、エンジンを

始動させるスタータを含む車両の電気負荷に対して電力を供給して、上記エンジンを始動させるジャンプスタートさせるための車両用補助給電装置に関する。

【背景技術】

【０００２】

従来より、例えば路上等において、消費電気量の増加等により、車両に搭載されたバッテリが放電気味となりバッテリ容量が不足して電圧が低下し、電装品が作動しなくなった場合（いわゆるバッテリあがりの場合）に、他の自動車のバッテリや非常携帯電源（ジャンプスタータ）からブースタケーブルを介して電力を供給することによりエンジンを始動させるジャンプスタートが行われている。そして、ジャンプスタートのための電気的な接続を容易にする技術（例えば、特許文献１，２参照）や、ジャンプスタートを判定する技術（例えば、特許文献３参照）など各種提案がなされている。

【０００３】

従来、ジャンプスタータでは、コストと容量の関係から密閉式鉛蓄電池が用いられていた。

【０００４】

また、ＡＣアダプタを用いて充電可能なバッテリ駆動型のノートＰＣやその付帯機器などの情報機器が広く普及している。また、車両の車内に標準的に搭載されているＤＣ１２Ｖ／２４Ｖの車内用電源ソケット、いわゆるシガーソケットに接続して利用可能な車載対応の電気機器が数多く提供されている。また、近年の携帯電話やＵＳＢ（Universal Serial Bus）で給電可能な携帯音楽プレーヤ等の省電力で駆動可能な電子機器が広く使用されている。従来から、屋外で電気機器を使用するためにポータブル電源装置が用いられている。

【先行技術文献】

【特許文献】

【０００５】

【特許文献１】特開２００４－１３４２７８号公報

【特許文献２】特開２０１１－９７７１０号公報

【特許文献３】特開２００７－２７８２１６号公報

【考案の概要】

【考案が解決しようとする課題】

【０００６】

ところで、一般的な密閉式鉛蓄電池を用いた従来のジャンプスタータでは、５～７ｋｇ程度の重量があり、携帯性に欠けるという問題点があった。また、満充電に平均１０～１５時間程度を要し、満充電状態での始動（ジャンプスタート）可能回数は平均で５回程度であった。さらに、鉛蓄電池は、過放電や過充電を行うと劣化が早くなり、自己放電も進みやすい性質があり、通常の鉛蓄電池の放電率は３０％程度であって、不使用状態でも自己放電して充電の必要性が出てくる。なれない人では適正な時期に充電操作が行えず、過充電や過放電を起こしてしまうことが多く、誰でも簡単に取り扱いができるものではなく、使い勝手が非常に悪いものであった。

【０００７】

また、従来のポータブル電源装置においても、鉛蓄電池が使われていたので重く、可搬性や使い勝手等の観点から従来のジャンプスタータと同様な問題点があった。

【０００８】

本考案は、上述の如き従来の実情に鑑みてなされたものであり、その目的は、ジャンプスタータとしての機能を有し、しかも、バッテリ駆動型のノートＰＣやその付帯機器などの情報機器、シガーソケットに接続して利用可能な車載対応の電気機器、携帯電話やＵＳＢで給電可能な携帯音楽プレーヤ等の使用を可能にするポータブル電源としての機能を有し、さらに、●ＢＤ（On-Board Diagnostic system）システムに対応した車両のメモリバックアップ用のポータブル電源として機能する小型軽量で携帯性に優れ、使い勝手のよい車両用補助給電装置を提供することにある。

【０００９】
本考案のさらに他の目的、本考案によって得られる具体的な利点は、以下において図面を参照して説明される実施に形態から一層明らかにされる。
【課題を解決するための手段】
【００１０】
本考案は、車両用補助給電装置であって、筐体と、上記筐体の側壁に設置され、充電用の給電ケーブルがＤＣプラグを介して外部接続されるＤＣジャックからなるＤＣ入力端子と、上記筐体内に設置され、上記ＤＣ入力端子に内部接続された充電回路部と、上記筐体内に設置され、上記充電回路部に内部接続されたリチウムイオン蓄電池と、上記筐体内に設置され、上記リチウムイオン蓄電池に内部接続された出力回路部と、上記筐体内に設置され、上記充電回路部及び出力回路部の動作を制御する制御回路部と、上記筐体の側壁に設置され、上記出力回路部に内部接続されており、ブースタケーブルがプラグを介して外部接続されるジャックからなるジャンプスタート用の第１のＤＣ出力端子と、上記筐体の側壁に設置され、上記出力回路部に内部接続されており、ＰＣ電源ケーブルがプラグを介して外部接続されるジャックからなるＰＣ電源用の第２のＤＣ出力端子と、上記筐体の正面壁に設置され、上記出力回路部に内部接続されており、ＵＳＢケーブルがＵＳＢプラグを介して外部接続されるＵＳＢソケットからなる第３のＤＣ出力端子と、上記筐体の背面壁に設置され、上記出力回路部に内部接続されており、外部電源ケーブルがシガープラグを介して外部接続されるシガーソケットからなる第４のＤＣ出力端子と、 上記筐体の正面壁に設置され、上記制御回路部に内部接続された電源スイッチ、ジャンプスタートスイッチと、上記筐体の正面壁に設置され、上記制御回路部により制御されて上記リチウムイオン蓄電池の充電量をレベルバー表示する充電量表示部とを備え、上記制御回路部は、上記リチウムイオン蓄電池の充電量を監視し、上記充電量を上記充電量表示部によりレベルバー表示させる制御を行うとともに、上記制御回路部は、上記第１のＤＣ出力端子にブースタケーブルを介して車両バッテリが外部接続され、上記電源スイッチがＯＮされた状態で、上記ジャンプスタートスイッチの操作入力を受け付けることにより、上記出力回路部から上記第１のＤＣ出力端子を介してジャンプスタート用の電源を供給する制御を行い、上記第２のＤＣ出力端子にＰＣ電源ケーブルを介してＰＣが外部接続された状態で、上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第２のＤＣ出力端子を介してＰＣ駆動用の電源を供給する制御を行い、上記第３のＤＣ出力端子にＵＳＢケーブルを介してＵＳＢ機器が外部接続された状態で、上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第３のＤＣ出力端子を介してＵＳＢ機器駆動用の電源を供給する制御を行い、上記第４のＤＣ出力端子に外部電源ケーブルを介して外部機器が外部接続された状態で、上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第４のＤＣ出力端子を介して外部機器駆動用の電源を供給する制御を行うことを特徴とする。
【００１１】
本考案車に係る両用補助給電装置において、上記ＤＣ入力端子には、一端にＡＣアダプタ又はシガーソケットを備えた上記充電用の給電ケーブルを介して給電され、上記制御回路部は、上記ＤＣ入力端子に上記充電用の給電ケーブルを介して給電された状態を検出すると、上記充電回路部を介して上記リチウムイオン蓄電池を充電する制御を行い、充電制御中は、上記出力回路部から外部への電源供給を禁止する制御を行うものとすることができる。
【００１２】
また、本考案車に係る両用補助給電装置において、上記制御回路部は、上記電源スイッチの操作による電源ＯＮを検知して上記充電量表示部の動作を制御し、電源ＯＮを表示するパワーランプとして上記充電量表示部を機能させ、この電源ＯＮ状態で上記ジャンプスタートスイッチの短時間操作によるジャンプスタートを検知してジャンプスタートモードの制御を行い、このジャンプスタートモードの制御において、上記第１のＤＣ出力端子に外部接続されたブースタケーブルを介してジャンプスタートさせる自動車の車載バッテリ

の電圧を正常に検知できた場合に、上記出力回路部の動作を制御し、上記リチウムイオン蓄電池をジャンプスタート用の電源として上記出力回路部を介して上記第１のＤＣ出力端子に接続するとともに、上記充電量表示部の動作を制御し、ジャンプスタートを表示するジャンプスタートランプとして上記充電量表示部を機能させるものとすることができる。

【００１３】

また、本考案車に係る両用補助給電装置において、上記制御回路部は、上記電源ＯＮ状態で上記ジャンプスタートスイッチが長時間操作されたことを検知してチャージブーストモードの制御を行い、このジャンプスタートモードの制御において、上記第１のＤＣ出力端子に外部接続されたブースタケーブルを介してジャンプスタートさせる自動車の車載バッテリの電圧を正常に検知できた場合に、上記出力回路部の動作を制御し、上記リチウムイオン蓄電池をチャージブースト用の電源として上記出力回路部を介して上記第１のＤＣ出力端子に接続するとともに、上記充電量表示部の動作を制御し、チャージブーストを表示するチャージブーストランプとして上記充電量表示部を機能させるものとすることができる。

【００１４】

また、本考案車に係る両用補助給電装置において、上記充電量表示部は、上記制御回路部により制御されて上記リチウムイオン蓄電池の充電量を発光色の変化とともにレベルバー表示する直線上に配置された複数個の発光素子からなり、上記制御回路部は、上記複数個の発光素子の１つを第１の発光色で点灯させることにより、上記電源ＯＮを表示するパワーランプとして上記充電量表示部を機能させ、上記複数個の発光素子の他の１つを第２の発光色で点灯させることにより、上記ジャンプスタートを表示するジャンプスタートランプ又は上記チャージブーストを表示するチャージブーストランプとして上記充電量表示部を機能させるものとすることができる。

【００１５】

また、本考案車に係る両用補助給電装置は、上記第４のＤＣ出力端子に上記外部電源ケーブルを介して外部機器として車両のＯＢＤ（On-Board Diagnostic system）システムが外部接続された状態で、上記制御回路部が上記電源スイッチの操作入力を受け付けることにより、上記出力回路部から上記第４のＤＣ出力端子を介して外部機器駆動用の電源として、上記ＯＢＤのメモリバックアップ用の電源供給を行うものとすることができる。

【００１６】

また、本考案車に係る両用補助給電装置は、上記リチウムイオン蓄電池として上記筐体内に設置した複数個の充電式リチウムイオン電池を備えるものとすることができる。

【００１７】

また、本考案車に係る両用補助給電装置は、上記筐体内に３．６Ｖの充電式リチウムイオンを３個実装することにより、重さ８３０ｇ程度で１２Ｖ／４．５Ａｈの容量のジャンプスタータとして機能させるものとすることができる。

【００１８】

さらに、本考案車に係る両用補助給電装置は、上記筐体内に３．６Ｖの充電式リチウムイオンを６個実装することにより、重さ１３００ｇ程度で１２Ｖ／９Ａｈの容量のジャンプスタータとして機能させるものとすることができる。

【考案の効果】

【００１９】

本考案によれば、ジャンプスタータとしての機能を有し、しかも、バッテリ駆動型のノートＰＣやその付帯機器などの情報機器、シガーソケットに接続して利用可能な車載対応の電気機器、携帯電話やＵＳＢで給電可能な携帯音楽プレーヤ等の使用を可能にするポータブル電源としての機能を有し、さらに、ＯＢＤ（On-Board Diagnostic system）システムに対応した車両のメモリバックアップ用のポータブル電源として機能する小型軽量で携帯性に優れ、使い勝手のよい車両用補助給電装置を提供することができる。

【図面の簡単な説明】

【００２０】

【図１】本考案を適用した車両用補助給電装置を前方側左斜め上方から見た外観斜視図である。
【図２】上記車両用補助給電装置を前方側右斜め上方から見た外観斜視図である。
【図３】上記車両用補助給電装置の構成要素の電気的な接続状態を示すブロック図である。
【図４】上記車両用補助給電装置のＤＣ入力端子に接続される充電用の給電ケーブルを示す平面図であり、（Ａ）はＡＣアダプタケーブルを示し、（Ｂ）はシガープラグケーブルを示している。
【図５】上記ＤＣ入力端子にＡＣアダプタを接続した状態の上記車両用補助給電装置を示す外観斜視図である。
【図６】充電レベルのバー表示状態を示す上記車両用補助給電装置の充電量表示部の正面図である。
【図７】上記車両用補助給電装置の第１のＤＣ出力端子に接続されるブースタケーブルを示す平面図である。
【図８】上記第１のＤＣ出力端子にブースタケーブルを介してジャンプスタートさせる自動車の車載バッテリを接続した状態の上記車両用補助給電装置を示す外観斜視図である。
【図９】第３のＤＣ出力端子にＵＳＢケーブルを介してＵＳＢ機器を接続した状態の上記車両用補助給電装置を示す外観斜視図である。
【図１０】上記車両用補助給電装置の第４のＤＣ出力端子に接続されるシガープラグケーブルを示す平面図であり、（Ａ）は一端にＤＣプラグを備える第１のシガープラグケーブルを示し、（Ｂ）は一端にＯＢＤ２コネクタに備える第２のシガープラグケーブルを示している。
【図１１】上記車両用補助給電装置の側面壁に設けられた側面照明灯の点灯状態を示す上記車両用補助給電装置の外観斜視図である。
【考案を実施するための形態】
【００２１】
以下、本考案の実施の形態について、図面を参照しながら詳細に説明する。なお、本考案は、以下の実施の形態のみに限定されるものではなく、本考案の要旨を逸脱しない範囲内において種々の変更が可能であることは言うまでもない。
【００２２】
本考案を適用した車両用補助給電装置１００を前方側左斜め上方から見た外観斜視図及び前方側右斜め上方から見た外観斜視図を図１及び図２に示す。また、上記車両用補助給電装置１００の構成要素の電気的な接続状態を示す図３のブロック図に示す。
【００２３】
この車両用補助給電装置１００は、図１及び図２の外観斜視図に示すように薄型箱状の筐体１０を備え、また、図３のブロック図に示すように上記筐体１０の内部に設置された充電回路部１、リチウムイオン蓄電池２、出力回路部３及び制御回路部４を備える。
【００２４】
そして、この車両用補助給電装置１００では、図１の外観斜視図に示すように、家庭用電源や自動車バッテリから例えば１２Ｖの電源供給を受けるためのＤＣ入力端子２０が上記筐体１０の左側面壁１１に設置されている。
【００２５】
このＤＣ入力端子２０は、後述するように充電用の給電ケーブルがＤＣプラグを介して外部接続されるＤＣジャックからなる。
【００２６】
このＤＣ入力端子２０には、図３のブロック図に示すように上記充電回路部１が内部接続されている。上記充電回路部１には、上記リチウムイオン蓄電池２が内部接続されている。また、上記リチウムイオン蓄電池２には、上記出力回路部３が内部接続されている。さらに、上記充電回路部１及び出力回路部３には、上記制御回路部４が内部接続されている。

【００２７】
また、この車両用補助給電装置１００は、図３のブロック図に示すように、上記出力回路部３に内部接続されたジャンプスタート用の第１のＤＣ出力端子３１、ＰＣ電源用の第２のＤＣ出力端子３２、ＵＳＢ電源用の第３のＤＣ出力端子３３及びメモリバックアップ電源用の第４のＤＣ出力端子３４を備える。
【００２８】
上記第１のＤＣ出力端子３１は、後述するようにブースタケーブルがプラグを介して外部接続されるジャックからなる。
【００２９】
上記第２のＤＣ出力端子３２は、後述するようにＰＣ電源ケーブルがプラグを介して外部接続されるジャックからなる。
【００３０】
上記第３のＤＣ出力端子３３は、後述するようにＵＳＢケーブルがＵＳＢプラグを介して外部接続されるＵＳＢソケットからなる。
【００３１】
上記第４のＤＣ出力端子３４は、後述するように外部電源ケーブルがシガープラグを介して外部接続されるシガーソケットからなる。
【００３２】
上記ジャンプスタート用の第１のＤＣ出力端子３１と、ＰＣ電源用の第２のＤＣ出力端子３２は、図２の外観斜視図に示すように、上記筐体１０の右側面壁１２に設置されている。また、図１の外観斜視図に示すように、上記ＵＳＢ電源用の第３のＤＣ出力端子３３は、上記筐体１０の正面壁１３に設置されており、上記メモリバックアップ電源用の第４のＤＣ出力端子３４は、上記筐体１０の左側面壁１１に設置されている。
【００３３】
また、この車両用補助給電装置１００は、図３のブロック図に示すように、上記制御回路部４に内部接続された電源スイッチ４１、ジャンプスタートスイッチ４２、ライトセレクトスイッチ４３及びサイドライト・オン／オフ・スイッチ４４を備える。上記電源スイッチ４１、ジャンプスタートスイッチ４２、ライトセレクトスイッチ４３及びサイドライト・オン／オフ・スイッチ４４は、図１の外観斜視図に示すように、上記筐体１０の正面壁１３に設置されている。
【００３４】
さらに、この車両用補助給電装置１００は、図３のブロック図に示すように、上記制御回路部４に内部接続された充電量表示部５１、バッテリロー表示灯５２、一対の非常用警告灯５３Ａ，５３Ｂ及び一対の側面照明灯５４Ａ，５４Ｂを備える。
【００３５】
上記充電量表示部５１及び一対の非常用警告灯５３Ａ，５３Ｂは、図１の外観斜視図に示すように、上記筐体１０の正面壁１３に設置されている。
【００３６】
上記充電量表示部５１は、直線状に配置された発光色の異なる複数（この実施の形態では、赤・橙・黄・緑の４色）のＬＥＤにより構成されている。この充電量表示部５１は、上記制御回路部４により制御されて、充電量をバー表示する機能を果たすばかりでなく、緑点灯によりパワーランプとして機能し、また、黄点灯によりジャンプスタートランプとして機能する。また、上記一対の非常用警告灯５３Ａ，５３Ｂは、赤色ＬＥＤと白色ＬＥＤからなり、上記制御回路部により制御されて、交互に点滅することにより非常用警告灯として機能する。
【００３７】
また、上記バッテリロー表示灯５２は、図２の外観斜視図に示すように、上記筐体１０の右側面壁１２に設置されている。
【００３８】
上記バッテリロー表示灯５２は、赤色ＬＥＤからなり、上記制御回路部４により制御さ