one or more claims of the Asserted Patents and/or Asserted Trademarks, including, without limitation, the specific Accused Products identified in this Complaint and the exhibits hereto; or, in the alternative, issue permanent limited exclusion orders specifically directed to each named Respondent and its subsidiaries, predecessors, affiliates, agents, successors, and assigns, excluding from entry into the United States certain portable battery jump starters and components that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks;

d) Issue permanent orders, pursuant to 19 U.S.C. § 1337(f), directing Proposed Respondents and any of their principals, stockholders, officers, directors, employees, agents, distributors, controlled (whether by stock ownership or otherwise) and majority-owned business entities, successors, and assigns to cease and desist from importing, selling, selling for importation, offering for sale, using, demonstrating, promoting, marketing, and/or advertising in the United States Respondents' portable battery jump starters and components thereof that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks, including, without limitation, the specific Accused Products identified in this Complaint and the exhibits hereto;

e) Impose a bond on importation and sales of infringing products during the 60-day Presidential review period pursuant to 19 U.S.C. § 1337(j); and

f) Grant all such other and further relief as it deems appropriate under the law, based upon the facts complained of herein and as determined by the Investigation.

RESPONSE: Schumacher states that the allegations contained in ¶ 476 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Schumacher denies that it has engaged in any unlawful act as alleged by the Complainant. Schumacher further denies that any of its Accused Products infringe any valid or enforceable one or more claims of the Asserted Patents and/or Asserted Trademarks against Schumacher in this Investigation.

RESPONSE TO THE NOTICE OF INVESTIGATION

Schumacher admits that the Commission has instituted an Investigation as set forth in the Commission's Notice of Investigation dated March 17, 2021, and published in the Federal Register on March 24, 2021. Schumacher denies that the importation into the United States, the sale for importation, or the sale within the United States after importation of "certain portable battery jump starters and components thereof" constitutes infringement of any claims of the

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Asserted Patents. Schumacher states that the Complainant did not assert its Asserted Trademark against Schumacher. Schumacher further denies that there is a violation of Section 337 of the Tariff Act of 1930, as amended, by reason of the alleged infringement of any asserted claim of the Asserted Patents. Schumacher further denies that there is a protectable domestic industry as required by subsection (a)(2) of Section 337.

SCHUMACHER'S STATEMENT UNDER 19 C.F.R. § 210.13(B)

Pursuant to Rule 210.13(b), Schumacher provides the following information. By providing this information, Schumacher intends only to supply data required by 19 C.F.R. § 210.13(b). Schumacher specifically denies that any of the information or supplied data relates to or supports any allegations of infringement against Schumacher or any violation of Section 337. Schumacher understands that Complainant in its Amended Complaint accuses Schumacher of infringement of one or more of claims of '015 patent and '024 patent.

1. Statistical data regarding the value of imports

Statistical data regarding the value of imports of Products Accused in the Complaint from January 2020 to March 2021 is [over $19 million]. The Harmonized Tariff Schedule Item Number used for the identified product is: 8507.60.0020.

2. Information regarding the name and address of supplier(s) of Schumacher's imports

[Schumacher has the companies below supply its Schumacher Product:

Name: Schumacher Power Technology (Binhai) Co., Ltd.

Address: No. 30, Century Road, Binhai County, Yancheng, Jiangsu, China, 215127

Name: Guangdong Boltpower Co., Ltd.

Address: 3-6 Floor, KelunTe Building, No. 5th Ganli Road, Longgang District, Shenzhen, Guangdong, China 518100

Name: Shenzhen Benrong Technology Co., Ltd.

Address: 2/F, A1 Block, Silicon Valley Power, Guanlan Branch Park, No. 335 Guiyue Road, Guanlan Town, Shenzhen, Guangdong, China]

3. Information regarding Schumacher's manufacturing capacity

Schumacher's capacity to produce the Accused Products equals roughly [over 10,000 units].

4. Information regarding the relative significance of United States sales

Schumacher's United States sales counts for [over 50%] of Schumacher's global sales.

AFFIRMATIVE DEFENSES

Schumacher asserts the following affirmative defenses in response to the allegations of the Amended Complaint, without admitting or acknowledging that Schumacher bears the burden of proof as to any of them. Because discovery has just commenced in this proceeding, Schumacher reserves the right to supplement and amend its defenses and to assert additional defenses based on discovery and additional information it obtains from its investigation as this Investigation proceeds, and to rely on additional affirmative defenses asserted by other Respondents in this Investigation.

First Affirmative Defense (Invalidity)

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On information and belief, the asserted claims of the Asserted Patents are invalid for failing to comply with one or more of the conditions of patentability set forth in the United States patent statutes, including but not limited to 35 U.S.C. §§ 101, 102, 103, 112, and/or 116.

All asserted claims of the Asserted Patents are invalid under 35 U.S.C. §§ 102 and/or 103 in view of one or more of the prior art references, either alone or in combination, cited by the examiner during prosecution of the Asserted Patents and related applications, disclosed by the applicants during prosecution of those applications, or identified by Respondents below. Schumacher is in the process of identifying additional relevant prior art, including through discovery, which is in its early stages at the time of this Response.

Patents and Published Applications

Patent/Publication No.	**Country of Origin**	**Issuance/Publication Date**
U.S. Patent Publication No. 2010/0173182 A1	US	July 8, 2010
U.S. Patent Publication No. 2009/0174362 A1	US	July 9, 2009
U.S. Patent No. 7,345,450 B2	US	March 18, 2008
U.S. Patent No. 6,426,606 B1	US	July 30, 2002
DE 20 2013 102 599 U1	Germany	October 2, 2013
JP 2015-115979	Japan	Jun 22, 2015 (filed December 9, 2013)
U.S. Patent Publication No. 2005/0110467 A1	US	May 26, 2005
2012/0068662 A1	US	March 22, 2012
U.S. Patent No. 7,508,171	US	March 24, 2009
U.S. Patent No. 7,579,811	US	August 25, 2009
U.S. Patent No. 5,831,350	US	November 3, 1998
U.S. Patent No. 6,057,667	US	May 2, 2000
U.S. Patent No. 6,249,106 B1	US	June 19, 2001
U.S. Patent No. 6,362,599	US	March 26, 2002
U.S. Patent No. 6,344,733	US	February 5, 2002
U.S. Patent No. 5,319,298	US	June 7, 1994

CONTAINS SCHUMACHER CONFIDENTIAL BUSINESS INFORMATION – SUBJECT TO PROTECTIVE ORDER

U.S. Patent No. 6,144,110	US	November 7, 2000
U.S. Patent No. 6,160,381	US	December 12, 2000
U.S. Patent No. 6,271,605	US	August 7, 2001
U.S. Patent No. 6,632,103	US	October 14, 2003
U.S. Patent No. 6,774,607	US	August 10, 2004
U.S. Patent No. 6,803,743	US	October 12, 2004
U.S. Patent No. 6,919,704	US	July 19, 2005
U.S. Patent No. 7,339,347	US	March 4, 2008
U.S. Patent No. 7,508,171	US	March 24, 2009
U.S. Patent No. 7,579,811	US	August 25, 2009
U.S. Patent No. 8,125,181 B2	US	February 28, 2012
U.S. Patent No. 8,172,603	US	May 8, 2012
U.S. Patent No. 8,994,327	US	March 31, 2015 (filed August 24, 2011)
U.S. Patent No. 9,007,023	US	April 14, 2015 (filed March 14, 2012)
U.S. Patent No. 9,263,717	US	February 16, 2016 (filed November 13, 2012)
U.S. Patent No. 9,263,907	US	February 16, 2016 (filed February 15, 2013)
U.S. Patent No. 9,287,725	US	March 15, 725 (filed April 19, 2012)
U.S. Patent No. 9,871,392	US	January 16, 2018 (filed September 17, 2010)
U.S. Patent No. 9,874,611	US	January 23, 2018 (priority application filed on July 16, 2009)
U.S. Patent Publication No. 2001/0038276 A1	US	November 8, 2001
U.S. Patent Publication No. 2002/0075003	US	June 20, 2002
U.S. Patent Publication No. 2004/0066168 A1	US	April 8, 2004
U.S. Patent Publication No. 2005/0162124 A1	US	July 8, 2005
U.S. Patent Publication No. 2010/0244766 A1	US	September 30, 2010
U.S. Patent Publication No. 2010/0301800 A1	US	December 2, 2010
U.S. Patent Publication No. 2011/0127947 A1	US	June 2, 2011
U.S. Patent Publication No. 2011/0279089 A1	US	November 17, 2011
U.S. Patent Publication No. 2012/0013189 A1	US	January 9, 2012
U.S. Patent Publication No. 2012/0139498 A1	US	June 7, 2012
U.S. Patent Publication No. 2013/0241488 A1	US	September 9, 2013
U.S. Patent Publication No. 2014/0159509 A1	US	June 12, 2014 (filed August 21, 2013)
U.S. Patent Publication No. 2015/0012174	US	January 8, 2015 (filed December 30, 2013)
AU 199869971 B2	Australia	July 30, 1998
EP 1673828 B1	Europe	August 5, 2013
WO 2000/024108A1	Europe	April 27, 2000
WO 2012/080996 A1	Europe	June 21, 2012
U.S. Patent Publication No. 2013/0154543	US	June 20, 2013

U.S. Patent No. 6,424,158	US	July 23, 2002
U.S. Patent No. 9,954,391	US	April 24, 2018 (priority application filed November 8, 2013)
U.S. Patent No. 5,319,298	US	June 7, 1994
WO Publication No. 2010/129723	Europe	November 11, 2010
U.S. Patent No. 8,172,603	US	May 8, 2012
U.S. Patent No. 9,506,446	US	November 29, 2016 (filed on October 31, 2013)
U.S. Patent No. 6,426,606	US	July 30, 2002
Chinese Patent No. 202696190	China	January 23, 2013
U.S. Patent No. 5,496,658	US	March 5, 1996
U.S. Patent No. 3,085,187	US	April 9, 1963
U.S. Patent No. 3,105,183	US	September 24, 1963
U.S. Patent No. 3,267,452	US	August 16, 1966
U.S. Patent No. 5,793,185	US	August 11, 1998
U.S. Patent No. 7,095,339	US	August 22, 2006
US 2005/0110467	US	May 2, 2005
U.S. Patent Publication No. 2013/0241488	US	September 19, 2013
US Patent No. 6,362,599	US	March 26, 2002
US Patent Publication No. 2009/0174362	US	July 9, 2009
US Patent Publication No. 2002/0075003 A1	US	June 20, 2002
JP 3182855U	Japan	April 11, 2013
US Patent No. 6,212,054	US	April 3, 2001
US Patent Publication No. 2010/0055546	US	March 4, 2010
US Patent No. 7,675,261	US	March 9, 2010
US Patent Publication No. 2013/0154544	US	June 20, 2013
US Patent Publication No. 2010/0181959	US	July 22, 2010
US Patent Publication No. 2003/0096158	US	May 22, 2003
CN 201947042U	China	August 24, 2011
US Patent Publication No. 2015/0012174	US	January 8, 2015

US Patent Publication No. 2009/0174362	US	July 9, 2009
US Patent No. 6,919,704	US	July 19, 2005
US Patent Publication No. 2010/0301800	US	December 2, 2010
US Patent Publication No. 2010/0013302	US	January 21, 2010
CN 203522157U	China	April 2, 2014
JP 2015115979	Japan	June 22, 2015

Non-patent Literature

Title	**Publication Date**
Carku Product Brochure for the Epower-20 jump starter product ("Epower-20 brochure")	April 15 - May 5, 2014
Carku Product Brochure for the Epower-21 jump starter product ("Epower-21 brochure")	April 15 - May 5, 2014

Prior Art Systems

System	**Date**	**Source**
Schumacher SL1 ("Schumacher SL1 System")	By at least as early as January 22, 2014, and no later than April 27, 2014	Schumacher Electric Corporation
HaiJiu SHF12000-12 ("HaiJiu System")	By at least as early as December 13, 2013, and no later than April 27, 2014	Hangzhou HaiJiu Battery Company
Asia Bright JPR Jump Start Products (e.g., JPR 1800, JPR 2600, JPR 4500, JPR 9000) ("JPR System")	By at least as early as December 3, 2012, and no later than April 27, 2014	Asia Bright Industrial (Hong Kong) Co., Ltd.
RESCUE 2100 Portable Power Pack ("RESCUE 2100 System")	By at least as early as January 9, 2012 and no later than April 27, 2014	QuickCable Corporation
Projecta HP2200 ("HP2200 System")	By at least as early as January 9, 2012 and no later than April 27, 2014	Brown & Watson International Pty. Ltd.

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DieHard Portable Power 950 ("DieHard 950 System")	By at least as early as December 2005, and no later than April 27, 2014	Schumacher Electric Corporation
Stanley LI1000-CA ("Stanley System")	By at least as early as 2011, and no later than April 27, 2014	Baccus Global LLC

Depending on the scope of the asserted claims of the Asserted Patents or Complainant's contentions in connection therewith, the asserted claims may be invalid for failure to provide written description or enabling disclosure pursuant to 35 U.S.C. § 112, subparagraph 1, and/or for indefiniteness under 35 U.S.C. § 112, subparagraph 2.

Schumacher will set forth further allegations consistent with the forthcoming schedule in this Investigation.

The allegations set forth herein are made on information and belief, and Schumacher reserves the right to alter, amend, or supplement this affirmative defense as the Investigation proceeds.

Second Affirmative Defense (Lack of Unfair Act)

Pursuant to 19 U.S.C. § 1337(a)(1)(B), Complainant has not and cannot prove that Schumacher has imported into the United States, sold for importation into the United States, or sold within the United States after importation any articles that infringe a valid and enforceable claim of the '015 or '024 patents, either directly or indirectly, contributorily or by inducement, literally or under the doctrine of equivalents, or otherwise. No act or method of competition by Schumacher constitutes a violation of 19 U.S.C. § 1337.

Schumacher's Accused Products do not infringe any of the asserted claims of the asserted patents. Independent claim 1 of the '015 Patent and independent claims 1, 29 and 30 of the '024 Patent each

include as an element a "vehicle battery isolation sensor" that, in addition to "isolation" is configured to detect presence of a vehicle battery connected between positive and negative polarity outputs of jump starter. Complainant appears to have read out of the patent claims the term "isolation" in its claim charts accompanying the Complaint. This is improper. The term "vehicle battery isolation sensor" should be construed to give "isolation" its correct meaning in which the input and output voltages are electrically isolated, This is consistent with an opto-isolator sensor as described in the specification and unlike something such as a resistive divider, which does not electrically isolate the input and output voltages.

A resistive divider is also called a resistive voltage divider which is a passive linear circuit that produces an output voltage (V_{out}) that is a fraction of its input voltage (V_{in}). For example, in the simplest case, where R_1 and R_2 (see below) are equal, the output voltage (V_{out}) will be ½ of the input voltage (V_{in}). *See* https://en.wikipedia.org/wiki/Voltage_divider#Resistive_divider.

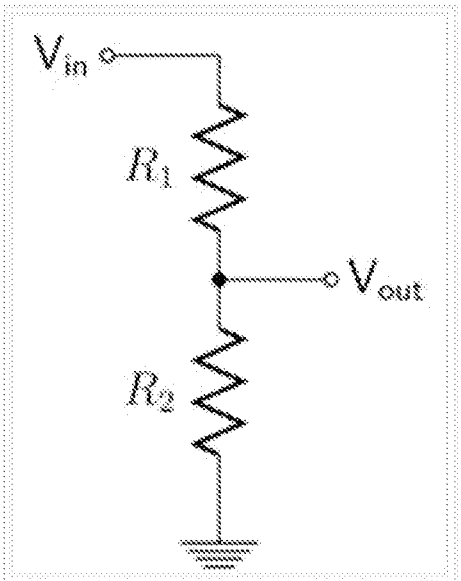
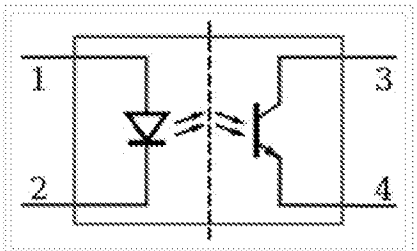


Figure 2. Simple resistive voltage divider

Conversely, there are multiple types of opto-isolators including phototransistor opto-isolators as shown below. *See* https://en.wikipedia.org/wiki/Opto-isolator#Phototransistor_opto-isolators. The opto-isolator illustrated below comprises a diode and phototransistor which electrically isolate the input and output voltages because there is a dielectric barrier therebetween. In operation, when the diode has

current flow, it transforms the electric signal into light (typically through a near infrared LED) and sends the light across the dielectric barrier. The phototransistor captures the light and transforms it back into an electric signal. Thus, the opto-isolators may ideally accomplish electrical isolation between its inputs and output(s).



Schematic diagram of an opto-isolator showing source of light (LED) on the left, dielectric barrier in the center, and sensor (phototransistor) on the right. [note 1]

The '015 Patent and the'024 Patent share a common specification and, thus, for simplicity, reference will be made to the '015 Patent. In the '015 Patent, the vehicle battery isolation sensor is configured to detect presence of a vehicle battery connected between positive and negative polarity outputs of a jump starter. To enable such a function, the '015 Patent discloses an opto-isolator, also referred to as photocoupler, optocoupler, or optical isolator.

In particular, the '015 Patent teaches that the car battery isolation sensor 12 (or, as more broadly claimed, vehicle battery isolation sensor) 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, 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, indicating the presence of a battery. *See* 5:26-34 and FIG 2A-4 of the specification. Conversely, if no battery is connected to the terminals of vehicle battery 72, the optocoupler LED 11A of the isolation sensor 12 will not conduct current, and is therefore turned off, indicating the absence of a battery. *See* 5:41-46. Therefore, the presence or absence of current may indicate the presence or absence of a vehicle battery connected between positive and negative polarity outputs of a jump starter.

Here, the "isolation" in the term "vehicle battery isolation sensor" should refer to electrical isolation between the inputs and outputs of the sensor, such as, for example, the isolation mechanism in an opto-isolator. Because independent claim 1 of the '015 Patent and independent claims 1, 29 and 30 of the '024 Patent add the modifier "isolation" to "sensor," a person of ordinary skill in the art would understand that the "isolation" has significance in the context of "vehicle battery isolation sensor" (or it would otherwise simply be a "vehicle battery sensor"). In the Merriam-Webster Dictionary, one definition of "isolate" is "insulate" and "insulate" is defined "to separate from conducting bodies by means of nonconductors so as to prevent transfer of electricity, heat, or sound" Merriam-Webster Online Dictionary, http://www.merriam-webster.com/dictionary/isolate, http://www.merriam-webster.com/dictionary/insulate (last visited April 7, 2021). Therefore, dictionary definitions reflect that "isolation" has a plain and ordinary meaning of "insulation." That said, the "vehicle battery isolation sensor" should be construed as a sensor accomplishing a kind of electrical insulation between the vehicle battery voltage and the sensor output voltage. Throughout the specification of the '015 Patent, the opto-isolator is the only discussed electronic sensor that implements a kind of insulation between the vehicle battery voltage and the sensor output voltage. For example, in the opto-isolator as illustrated above, the diode and the sensor (which may be made of a phototransistor or photo-resistor) are electrically isolated, i.e., insulated, by a dielectric barrier.

However, the alleged resistive divider as shown in the circuit schematic of Exs. 155, 156, and 157 of the Amended Complaint do not enable any electrical isolation function between the vehicle battery voltage and the output voltage of the resistor divider (*i.e.*, the voltage at the node between the two resistors). Therefore, the resistive divider cannot be considered as the vehicle battery isolation sensor as claimed in independent claim 1 of '015 Patent and independent claims 1, 29 and 30 of the '024 Patent.

Moreover, at least the most recent versions of Schumacher Accused Products Models DL800L and SL1396, in addition to other models that will be sold in the future, further differentiate from the claims of the '015 Patent and '024 Patent. Unlike the current models that Claimant contends use a first

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resistive divider for the vehicle battery isolation sensor and a second resistive divider for the reverse polarity sensor, with each sensor providing a signal to the microcontroller and the microcontroller providing an output signal to the power switch based on both signals from both sensors, the microcontroller in the most recent versions of Schumacher Accused Products Models DL800L and SL1396 (namely, DL800LS1, DL800S4, SL1396S1 and SL1396S4) does not provide an output signal in determining how to control the power switch that is based on both the first resistive divider (which Claimant contends is the vehicle battery isolation sensor) and the second resistive divider (which Claimant contends is the reverse polarity sensor).

Because this request covers the issue of claim construction, Respondents will rely upon counsel and experts for the response to this request. Accordingly, Respondents do not identify anyone at the Schumacher Respondents regarding Respondent's response to this Interrogatory. Instead, Respondents will identify their expert(s) when required to do so based on the Procedural Schedule that is issued in this Investigation. The Investigation is ongoing and Respondents will supplement responsive, relevant, non-privileged information on a mutually agreeable date or on a date set by the Ground Rules and Procedural Schedule of this investigation.

Third Affirmative Defense (Other Defenses)

Schumacher reserves the right to amend its Response to include other affirmative defenses that Schumacher may learn of during the course of this Investigation.

REQUEST FOR RELIEF

WHEREFORE, Respondent respectfully requests that the Commission:

1. Find that no violation of Section 337 of the Tariff Act of 1930, as amended, exists by reason of importation, sale for importations or sale after importation by Schumacher of

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certain portable battery jump starters and components thereof as described in the Amended Complaint and Notice of Investigation;

2. Deny Complainant's request for a general exclusion order, a limited exclusion order, cease and desist orders, and bond directed to products manufactured by or for Schumacher, its subsidiaries, affiliates, related companies and agents;

3. Find that the asserted claims of the Asserted Patents are invalid and unenforceable;

4. Determine that Schumacher has not infringed any claims of the Asserted Patents;

5. Determine that Complainant has failed to meet the domestic industry requirement; and

6. Grant Schumacher such other and further relief that the Commission determines is appropriate based upon the facts determined by the investigator and the authority of the Commission.

CONCLUSION

Schumacher respectfully requests that the Commission determine and direct that: (i) Schumacher has not violated 19 U.S.C. § 1337; (ii) Schumacher has not infringed any claims of the Asserted Patents; (iii) the asserted claims of the Asserted Patents are invalid and/or unenforceable; (iv) Schumacher has not committed any unfair acts; and (v) Schumacher is entitled to such other and further relief as the Commission deems just and proper under the law.

Respectfully submitted,

Dated: April 12, 2021

/s/Lyle B. Vander Schaaf

Lyle B. Vander Schaaf
Fei Hu

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Counsel for Respondents Schumacher Electric Corporation, Schumacher Power Technology (Binhai) Co. Ltd.

VERIFICATION OF RESPONSE TO THE COMPLAINT

I, Shantel Bill, declare, in accordance with 19 C.F.R. §§ 210.4 and 210.13, under penalty of perjury under the laws of the United States of America, that the following statements are true:

1. I am General Counsel of Schumacher Electric Corporation and Schumacher Power Technology (Binhai) Co., Ltd. and am duly authorized to sign this Response;

2. I have read the foregoing Response;

3. To the best of my knowledge, information, and belief, based upon reasonable inquiry, the foregoing is well-founded in fact as is warranted by existing law or a non-frivolous argument for the extension, modification, or reversal of existing law or the establishment of new law; and

4. The foregoing Response is not being filed for an improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of litigation.

Executed this 12th Day of April, 2021

/s/ Shantel Bill
Shantel Bill

CERTIFICATE OF SERVICE

I, Susan Damron, certify that a copy of the foregoing was served as indicated to the parties listed below on this 12th day of April, 2021:

The Honorable Lisa R. Barton Secretary to the Commission **U.S. International Trade Commission** 500 E. Street, SW, Room 112 Washington, DC 20436	☒ Via EDIS ☐ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
The Honorable Clark S. Cheney Administrative Law Judge **U.S. International Trade Commission** 500 E. Street, SW, Room 317 Washington, DC 20436 Emails: Cheney337@usitc.gov	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Office of Unfair Import Investigation	
Todd Taylor Jeffrey Hsu Office of Unfair Import Investigations U.S. International Trade Commission 500 E Street, S.W., Room 401 Washington, D.C. 20436 Todd.Taylor@usitc.gov Jeffrey.Hsu@usitc.gov	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Counsel for Complainants NOCO Company	
Deanna Tanner Okun, V. James Adduci, II Lauren E. Peterson Juan J. Garcia **Adduci, Mastriani & Schaumberg L.L.P.** 1133 Connecticut Avenue, NW Washington, DC 20036 Email: NOCO-001@adduci.com Michael J. Garvin Aaron M. Williams **Vorys, Sater, Seymour and Pease LLP** 200 Public Square, Suite 1400 Cleveland, OH 44114-2327 NOCO-ITC@vorys.com	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent Advance Auto Parts, Inc.	
Stefani E. Shanberg **Morrison & Foerster LLP** 425 Market Street San Francisco, CA 94105	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

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Email: sshanberg@mofo.com and AdvanceAutoPartsITC@mofo.com Veronica S. Ascarrunz **Morrison & Foerster LLP** 2100 L Street, NW, Suite 900 Washington, DC 20037	
Respondents AutoZone, Inc. and Best Parts, Inc.	
Adam D. Swain Brian D. Hill Emily Grand **Alston & Bird LLP** 650 F Street NW Washington D.C. 20004 Email: Autozone-ITC@alston.com	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondents Best Buy Co., Inc. and Guangdong Boltpower Energy Co., Ltd	
P. Andrew Riley Lei Mei Robert A. Hall Jiwei Zhang **Mei & Mark LLP** 818 18th Street NW, Suite 410 Washington, DC 20006 Email:MeiMark-ITC-1256@meimark.com Timothey Wang Hao Ni Neal Massand Stevenson Moore V **Ni Wang & Massand, PPLC** 8140 Walnut Hill Ln. Ste. 500 Dallas, TX 75231	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent Clore Automotive, LLC and Halo2Cloud, LLC	
Beau Jackson **Husch Blackwell LLP** 4801 Main Street, Suite 1000 Kansas City, MO 64112 CloreITC@huschblackwell.com HaloITC@huschblackwell.com Rudolph A. Telscher, Jr. Paul Smelcer Soham Desai **Husch Blackwell LLP** 190 Carondelet Plaza, Suite 600	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

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St. Louis, MO 63105	
Respondent Deltran USA, LLC	
Austen C. Endersby **Fox Rothschild LLP** 1030 15th Street, N.W., Suite 380 East Washington, DC 20005 Email: Deltran-ITC@foxrothschild.com Jonathan R. Lagarenne **Fox Rothschild LLP** 1225 17th Street, Suite 2200 Denver, CO 80202 Robert J. Sacco **Fox Rothschild LLP** 777 S. Flagler Drive Suite 1700 West Tower West Palm Beach, FL, 33401 Ryan N. Miller **Fox Rothschild LLP** 2000 Market Street, 20th Floor Philadelphia, Pennsylvania 19103	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent National Automotive Parts Association, LLC (d/b/a NAPA)	
Benjamin Levi Rett Snotherly **Levi & Snotherly, PLLC** 1101 Connecticut Avenue, N.W., Suite 450 Washington, DC 20036 Email: napa-ls-1256@levisnotherly.com	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent QVC, Inc.	
Beau Jackson **Husch Blackwell LLP** 4801 Main Street, Suite 1000 Kansas City, MO 64112 Telephone: 816.983.8202 Beau.Jackson@huschblackwell.com Lisa M. Kattan **Baker Botts L.L.P.** 700 K Street, N.W. Washington, D.C. 20001 Phone: (202) 639-7700	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

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Respondent Shenzhen Carku Technology Co., Ltd., 70mai. Co., Ltd., Antigravity Batteries LLC, Gooloo Technologies LLC, Horizon Tool, Inc., Great Neck Saw Manufacturers Inc., Matco Tools Corporation, Nekteck, Inc., Paris Corporation and PowerMax Battery (U.S.A.), Inc.	
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Respondent Smartech Products, Inc.	
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Respondent Winplus North America, Inc.	
Tuhin Ganguly David Shaw Goutam Patnaik **Desmarais LLP**	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

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/s/ Susan Damron

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UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Clark S. Cheney
Administrative Law Judge

In the Matter of: **CERTAIN PORTABLE BATTERY JUMP STARTERS AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1256**

RESPONSE OF GUANGDONG BOLTPOWER ENERGY CO., LTD. TO THE FIRST AMENDED COMPLAINT AND THE NOTICE OF INVESTIGATION

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Counsel for Respondent Guangdong Boltpower Energy Co., Ltd.

Respondent Guangdong Boltpower Energy Co., Ltd. ("Respondent" or "Boltpower") respectfully submits the following Response to Complainants The NOCO Company's ("Complainants" or "NOCO") the Amended Complaint Under Section 337 of the Tariff Act of 1930, as amended, and the Commission's Notice of Investigation. The headings set forth below repeat the headings in the Complaint and are not intended to be construed as an admission of any fact relating thereto.

RESPONSE TO THE NOTICE OF INVESTIGATION

Responding to the March 17, 2021, Notice of Investigation ("Notice") filed in the above-titled investigation, Boltpower admits such an investigation exists, and that Boltpower is a named respondent therein. However, Boltpower otherwise denies the existence of the predicates and requirements for liability under such investigation, and therefore denies the allegations in the Notice, to the extent such allegations exist.

RESPONSE TO THE AMENDED COMPLAINT

I. INTRODUCTION

1. Responding to paragraph 1, Boltpower admits that NOCO purports to bring an action pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("Section 337"). Boltpower denies the existence of the predicates and requirements of such action with respect to Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

2. Responding to paragraph 2, Boltpower admits that NOCO listed the Proposed Respondents in Section II.B in the Complaint. Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower. Boltpower lacks

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sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

3. Responding to paragraph 3, Boltpower admits that NOCO alleges the Accused Products infringe one or more of the Asserted Claims of United States Patent Nos. 9,007,015 and 10,604,024 (collectively, the "Asserted Patents"), and Exhibits 1-2 to the Complaint purport to be copies of the Asserted Patents. Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

4. Responding to paragraph 4, Boltpower admits that NOCO alleges certain of Respondents' Accused Products also infringe one or more of U.S. Trademark Reg. Nos. 4,811,656 and 4,811,749 (collectively, the "Asserted Trademarks"), and Exhibits 3-4 to the Complaint purport to be copies of the Asserted Patents. Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

5. Responding to paragraph 5, Boltpower admits that NOCO asserts the Accused Products infringe at least the claims in Table 1 of one or more Asserted Patents in violation of Section 337(a)(1)(B)(i), either literally or under the doctrine of equivalents. Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents.

Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

6. Responding to paragraph 6, Boltpower admits that NOCO provides a description of the category of the Accused Products. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

7. Responding to paragraph 7, Boltpower denies a domestic industry exists or is well established.

8. Responding to paragraph 8, Boltpower admits that NOCO seeks a general exclusion order pursuant to Section 337(d)(2), cease and desist orders pursuant to Section 337(f), and a bond pursuant to Section 337(j). Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower also denies a general exclusion order or cease and desist orders are required. Boltpower further denies that any bond is required. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

9. Responding to paragraph 9, Boltpower admits that NOCO seeks limited exclusion orders alternatively. Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

II. THE PARTIES

A. Complainant NOCO

10. Responding to paragraph 10, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

11. Responding to paragraph 11, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

12. Responding to paragraph 12, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

13. Responding to paragraph 13, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

14. Responding to paragraph 14, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

B. The Proposed Respondents

15. Responding to paragraph 15, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

1. Carku Respondents

a) Advance Auto Parts, Inc.

16. Responding to paragraph 16, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

17. Responding to paragraph 17, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Antigravity Batteries LLC

18. Responding to paragraph 18, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

19. Responding to paragraph 19, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Aukey Technology Co., Ltd.

20. Responding to paragraph 20, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

21. Responding to paragraph 21, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

d) Autogen Technology Co., Ltd.

22. Responding to paragraph 22, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

23. Responding to paragraph 23, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation

e) Gooloo Technologies LLC

24. Responding to paragraph 24, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

25. Responding to paragraph 25, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

f) Guangzhou Unique Electronics Co., Ltd.

26. Responding to paragraph 26, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

27. Responding to paragraph 27, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

g) Horizon Tool, Inc.

28. Responding to paragraph 28, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

29. Responding to paragraph 29, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

h) Huizhou Grepro E-Commerce

30. Responding to paragraph 30, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

31. Responding to paragraph 31, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

i) Medcursor, Inc.

32. Responding to paragraph 32, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

33. Responding to paragraph 33, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

j) Nekteck, Inc.

34. Responding to paragraph 34, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

35. Responding to paragraph 35, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

k) PowerMax Battery (U.S.A.), Inc.

36. Responding to paragraph 36, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

37. Responding to paragraph 37, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

l) Prime Global Products, Inc.

38. Responding to paragraph 38, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

39. Responding to paragraph 39, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

m) Shenzhen Carku Technology Co., Ltd.

40. Responding to paragraph 40, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

41. Responding to paragraph 41, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

n) Shenzhen Moock Technology Co., Ltd.

42. Responding to paragraph 42, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

43. Responding to paragraph 43, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

o) Shenzhen Take Tools Co., Ltd.

44. Responding to paragraph 44, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

45. Responding to paragraph 45, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

p) Sictec Instruments Co., Ltd.

46. Responding to paragraph 46, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

47. Responding to paragraph 47, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

q) Walmart Inc.

48. Responding to paragraph 48, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

49. Responding to paragraph 49, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

r) 70mai Co., Ltd.

50. Responding to paragraph 50, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

51. Responding to paragraph 51, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Boltpower Respondents

a) Anker Technology (UK) Ltd.

52. Responding to paragraph 52, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

53. Responding to paragraph 53, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Arteck Electronic Co., Ltd.

54. Responding to paragraph 54, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

55. Responding to paragraph 55, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Best Parts, Inc.

56. Responding to paragraph 56, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

57. Responding to paragraph 57, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

d) Circus Link, Inc.

58. Responding to paragraph 58, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

59. Responding to paragraph 59, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

e) Deltran USA, LLC

60. Responding to paragraph 40, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

61. Responding to paragraph 61, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

f) FlyLink Tech Technologies Co., Ltd.

62. Responding to paragraph 62, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

63. Responding to paragraph 63, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

g) Fconegy Co., Ltd.

64. Responding to paragraph 64, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

65. Responding to paragraph 65, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

h) Guangdong Boltpower Energy Co., Ltd.

66. Responding to paragraph 66, Boltpower admits that Boltpower is a Chinese corporation and is organized and existing under the laws of China. Boltpower further admits that Hunan Boltpower New Energy Co. Ltd. is an affiliated company. Boltpower denies the remaining allegations in this paragraph.

67. Responding to paragraph 67, Boltpower admits that it manufactures and offers for sale of jump starters in China. Boltpower denies the remaining allegations in this paragraph, in particular, denies that any Boltpower product infringes the Asserted Patents.

i) Guangzhou Autolion Electric Technology Co., Ltd.

68. Responding to paragraph 68, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

69. Responding to paragraph 69, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

j) Integrated Supply Network, LLC

70. Responding to paragraph 70, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

71. Responding to paragraph 71, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

k) K-Tool International

72. Responding to paragraph 72, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

73. Responding to paragraph 73, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

l) Lowe's Companies, Inc.

74. Responding to paragraph 74, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

75. Responding to paragraph 75, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

m) Matco Tools Corporation.

76. Responding to paragraph 76, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

77. Responding to paragraph 77, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

n) MonoPrice, Inc.

78. Responding to paragraph 78, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

79. Responding to paragraph 79, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

o) National Automotive Parts Association, LLC

80. Responding to paragraph 80, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

81. Responding to paragraph 81, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

p) O'Reilly Automotive, Inc.

82. Responding to paragraph 82, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

83. Responding to paragraph 83, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

q) Pep Boys.

84. Responding to paragraph 84, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

85. Responding to paragraph 85, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

r) Schumacher Power Technology Ltd.

86. Responding to paragraph 86, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

87. Responding to paragraph 87, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

s) Shenzhen Chic Electrics Co., Ltd.

88. Responding to paragraph 88, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

89. Responding to paragraph 89, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

t) Shenzhen Dingjiang Technology Co., Ltd. LLLC

90. Responding to paragraph 90, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

91. Responding to paragraph 91, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

u) Shenzhen Lianfatong Technology Co., Ltd.

92. Responding to paragraph 92, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

93. Responding to paragraph 93, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

v) Shenzhen Li Feng Maoyiyouxiangongsi

94. Responding to paragraph 94, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

95. Responding to paragraph 95, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

w) Shenzhen Mediatek Tong Technology Co., Ltd.

96. Responding to paragraph 96, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

97. Responding to paragraph 97, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

x) Shenzhen Topdon Technology Co., Ltd.

98. Responding to paragraph 98, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

99. Responding to paragraph 99, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

y) Shenzhen Valuelink E-Commerce Co., Ltd.

100. Responding to paragraph 100, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

101. Responding to paragraph 101, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

z) Smart Well Enterprise Limited.

102. Responding to paragraph 102, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

103. Responding to paragraph 103, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

aa) Tii Trading Inc.

104. Responding to paragraph 104, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

105. Responding to paragraph 105, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

bb) Zhejiang Qingyou Electronic Commerce Co., Ltd.

106. Responding to paragraph 106, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

107. Responding to paragraph 107, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

3. Smartech Respondents

a) Smartech Products, Inc.

108. Responding to paragraph 108, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

109. Responding to paragraph 109, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

4. Weego Respondents

a) Shenzhen Jieruijia Technology Co., Ltd.

110. Responding to paragraph 110, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

111. Responding to paragraph 111, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Paris Corporation

112. Responding to paragraph 112, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

113. Responding to paragraph 113, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

5. WinPlus Respondents

a) Shenzhen Winplus Technology Co., Ltd.

114. Responding to paragraph 114, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

115. Responding to paragraph 115, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Winplus North America, Inc.

116. Responding to paragraph 116, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

117. Responding to paragraph 117, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

6. Great Neck Respondents

a) AutoZone, Inc.

118. Responding to paragraph 118, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

119. Responding to paragraph 119, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Great Neck Global, Inc. & Great Neck Saw Manufacturers, Inc.

120. Responding to paragraph 120, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

121. Responding to paragraph 121, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

122. Responding to paragraph 122, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

7. ThiEye Respondents

a) Dongguan Hangchebao Energy Technology Co., Ltd.

123. Responding to paragraph 123, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

124. Responding to paragraph 124, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) ThiEye Technologies Co., Ltd.

125. Responding to paragraph 125, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

126. Responding to paragraph 126, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

8. Energen/ Performance Tool Respondents

a) Best Buy Co., Inc.

127. Responding to paragraph 127, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

128. Responding to paragraph 128, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Chao Fung Trading Co. Ltd.

129. Responding to paragraph 129, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

130. Responding to paragraph 130, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Energen, Inc.

131. Responding to paragraph 131, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

132. Responding to paragraph 132, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

d) Wilmar Corporation

133. Responding to paragraph 133, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

134. Responding to paragraph 134, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

III. THE PRODUCTS AT ISSUE

135. Responding to paragraph 135, Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

136. Responding to paragraph 136, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

137. Responding to paragraph 137, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

138. Responding to paragraph 138, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

A. Complainants' Jump Starters

139. Responding to paragraph 139, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

140. Responding to paragraph 140, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

141. Responding to paragraph 141, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

142. Responding to paragraph 142, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

B. Respondents' Jump Starters

143. Responding to paragraph 143, Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the allegations of paragraph that are addressed to other Respondents and on that basis deny those allegations.

144. Responding to paragraph 144, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

145. Responding to paragraph 145, Boltpower admits that some of its manufactured products are sold in brick-and-mortar retail locations in the United States and/or on the websites of these retailers. Boltpower denies the remaining allegations in this paragraph.

IV. THE ASSERTED PATENTS

146. Responding to paragraph 146, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

147. Responding to paragraph 147, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

A. U.S. Patent No. 9,007,015

1. Identification of the Patent and Ownership

148. Responding to paragraph 148, Boltpower admits that Exhibit 1 purports to be a certified copy of the '105 Patent. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

149. Responding to paragraph 149, Boltpower admits that Appendices A1 and A2 purport to be a certified copy of the prosecution history for the '105 Patent. Boltpower lacks

sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

150. Responding to paragraph 150, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Non-Technical Description of the Patent

151. Responding to paragraph 151, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

152. Responding to paragraph 152, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

3. Foreign Counterparts of the Patent

153. Responding to paragraph 153, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

154. Responding to paragraph 154, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

4. Licensees to the Patent

155. Responding to paragraph 155, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

B. U.S. Patent No. 10,604,024

1. Identification of the Patent and Ownership

156. Responding to paragraph 156, Boltpower admits that Exhibit 2 purports to be a certified copy of the '024 Patent. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

157. Responding to paragraph 157, Boltpower admits that Appendices. B1 and B2 purports to be a certified copy of the prosecution history for the '024 Patent. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

158. Responding to paragraph 158, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Non-Technical Description of the Patent

159. Responding to paragraph 159, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

160. Responding to paragraph 160, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

3. Foreign Counterparts of the Patent

161. Responding to paragraph 161, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

4. Licensees to the Patent

162. Responding to paragraph 162, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

V. THE ASSERTED TRADEMARKS

A. U.S. Trademark Reg. No. 4,811,656

163. Responding to paragraph 163, Boltpower admits that Exhibit 3 purports to be a copy of the Certificate of Registration for the ULTRASAFE mark for U.S. Trademark Reg. No. 4,811,656. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

164. Responding to paragraph 164, Appendix C purports to be a certified copy of the prosecution history of the ULTRASAFE trademark for U.S. Trademark Reg. No. 4,811,656. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

B. U.S. Trademark Reg. No. 4,811,749

165. Responding to paragraph 165, Exhibit 4 purports to be a copy of the Certificate of Registration for the SAFELY JUMP START A DEAD BATTERY IN SECONDS mark for U.S. Trademark Reg. No. 4,811,749. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

166. Responding to paragraph 166, Appendix D purports to be a certified copy of the prosecution history of the SAFELY JUMP START A DEAD BATTERY IN SECONDS trademark for U.S. Trademark Reg. No. 4,811,749. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

VI. THE ASSERTED PATENTS

A. Infringement of the Asserted Patents

167. Responding to paragraph 167, Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

168. Responding to paragraph 168, Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

169. Responding to paragraph 169, Boltpower denies the existence of the predicates and requirements of a violation of Section 337 with respect to Boltpower and, in particular, denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

1. Claim Chart 01- Carku Accused Products

a) Carku Design

170. Responding to paragraph 170, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

171. Responding to paragraph 171, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

172. Responding to paragraph 172, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

173. Responding to paragraph 173, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

174. Responding to paragraph 174, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Claim Chart 02- Boltpower Accused Products

a) Boltpower Design

175. Responding to paragraph 175, Boltpower admits that some of the Accused Products in Claim Chart 02 are lithium battery powered jump starters manufactured by Boltpower and they were offered by several sellers under different brand names. Boltpower denies the remaining allegations in this paragraph.

b) Infringement of the '015 Patent

176. Responding to paragraph 176, Boltpower denies each and every allegation.

177. Responding to paragraph 177, Boltpower admits Exhibit 112 purports to be a claim chart. Boltpower denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

c) Infringement of the '024 Patent

178. Responding to paragraph 178, Boltpower denies each and every allegation.

179. Responding to paragraph 179, Boltpower admits Exhibit 112 purports to be a claim chart. Boltpower denies that any Boltpower product infringes the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

3. Claim Chart 03- Smartech Accused Products

a) Smartech Design

180. Responding to paragraph 180, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

181. Responding to paragraph 181, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

182. Responding to paragraph 182, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

183. Responding to paragraph 183, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

184. Responding to paragraph 184, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

4. Claim Chart 04- Weego Accused Products

a) Weego Design

185. Responding to paragraph 185, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

186. Responding to paragraph 186, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

187. Responding to paragraph 187, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

188. Responding to paragraph 188, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

189. Responding to paragraph 189, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

5. Claim Chart 05- WinplusAccused Products

a) Winplus Design

190. Responding to paragraph 190, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

191. Responding to paragraph 191, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

192. Responding to paragraph 192, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

193. Responding to paragraph 193, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

194. Responding to paragraph 194, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

6. Claim Chart 06- Great Neck Accused Products

a) Great Neck Design

195. Responding to paragraph 195, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

196. Responding to paragraph 196, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

197. Responding to paragraph 197, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

7. Claim Chart 07- ThiEye Accused Products

a) ThiEye Design

198. Responding to paragraph 198, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

199. Responding to paragraph 199, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

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200. Responding to paragraph 200, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

201. Responding to paragraph 201, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

202. Responding to paragraph 202, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

8. Claim Chart 08- Energen/Performance Tool Accused Products

a) Energen/Performance Tool Design

203. Responding to paragraph 203, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

204. Responding to paragraph 204, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

205. Responding to paragraph 205, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

206. Responding to paragraph 206, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

207. Responding to paragraph 207, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

9. Claim Chart 09- HALO Accused Products

a) HALO Design

208. Responding to paragraph 208, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

209. Responding to paragraph 209, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

210. Responding to paragraph 210, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

211. Responding to paragraph 211, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

212. Responding to paragraph 212, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

10. Claim Chart 10- Clore Accused Products

a) Clore Design

213. Responding to paragraph 213, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

b) Infringement of the '015 Patent

214. Responding to paragraph 214, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

215. Responding to paragraph 215, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

c) Infringement of the '024 Patent

216. Responding to paragraph 216, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

217. Responding to paragraph 217, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

B. Infringement of the Asserted Trademarks

218. Responding to paragraph 218, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

219. Responding to paragraph 219, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

220. Responding to paragraph 220, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

221. Responding to paragraph 221, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

222. Responding to paragraph 222, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Audew

223. Responding to paragraph 223, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Autown

224. Responding to paragraph 224, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Beatit

225. Responding to paragraph 225, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Imazing

226. Responding to paragraph 226, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Jumtop

227. Responding to paragraph 227, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Nexpow

228. Responding to paragraph 228, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Sanrock

229. Responding to paragraph 229, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Topdon

230. Responding to paragraph 230, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

Trekpow

231. Responding to paragraph 231, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

VII. SPECIFIC INSTANCES OF IMPORTATION AND SALE

232. Responding to paragraph 232, Boltpower admits that it manufactures jump starter products. Boltpower denies that it imports, sells for importation, or sells after importation the accused products in the United States.

A. Carku Brands

1. AllStart

233. Responding to paragraph 233, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

234. Responding to paragraph 234, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

235. Responding to paragraph 235, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

236. Responding to paragraph 236, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Antigravity Batteries

237. Responding to paragraph 237, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

238. Responding to paragraph 238, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

239. Responding to paragraph 239, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

240. Responding to paragraph 240, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

3. Audew

241. Responding to paragraph 241, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

242. Responding to paragraph 242, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

243. Responding to paragraph 243, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

244. Responding to paragraph 244, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

4. Autogen

245. Responding to paragraph 245, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

246. Responding to paragraph 246, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

247. Responding to paragraph 247, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

248. Responding to paragraph 248, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

5. Freeman

249. Responding to paragraph 249, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

250. Responding to paragraph 250, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

251. Responding to paragraph 251, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

252. Responding to paragraph 252, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

6. Gooloo

253. Responding to paragraph 253, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

254. Responding to paragraph 254, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

255. Responding to paragraph 255, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

256. Responding to paragraph 256, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

7. Grepro

257. Responding to paragraph 257, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

258. Responding to paragraph 258, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

259. Responding to paragraph 259, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

260. Responding to paragraph 260, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

8. iClever

261. Responding to paragraph 261, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

262. Responding to paragraph 262, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

263. Responding to paragraph 263, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

9. M Moock

264. Responding to paragraph 264, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

265. Responding to paragraph 265, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

266. Responding to paragraph 266, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

267. Responding to paragraph 267, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

10. Nekteck

268. Responding to paragraph 268, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

269. Responding to paragraph 269, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

270. Responding to paragraph 270, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

271. Responding to paragraph 271, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

11. PowerMax

272. Responding to paragraph 272, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

273. Responding to paragraph 273, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

274. Responding to paragraph 274, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

275. Responding to paragraph 275, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

12. Tacklife

276. Responding to paragraph 276, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

277. Responding to paragraph 277, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

278. Responding to paragraph 278, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

279. Responding to paragraph 279, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

13. Xiaomi

280. Responding to paragraph 280, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

281. Responding to paragraph 281, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

282. Responding to paragraph 282, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

283. Responding to paragraph 283, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

B. Boltpower Brands

1. Ampeak

284. Responding to paragraph 284, Boltpower admits that Boltpower manufactured certain products bearing model number JS1 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

285. Responding to paragraph 285, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

286. Responding to paragraph 286, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

287. Responding to paragraph 287, Boltpower admits that the packaging of the Ampeak Accused Products purportedly indicates that the products are "Made in China."

2. Arteck

288. Responding to paragraph 288, Boltpower admits that Boltpower manufactured certain products bearing model numbers A7, D29, JS08, and JS12 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

289. Responding to paragraph 289, Boltpower admits that Boltpower manufactured certain products bearing model numbers A7, D29, JS08, and JS12 outside the U.S. Boltpower

lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

290. Responding to paragraph 290, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

291. Responding to paragraph 291, Boltpower admits that the packaging of the Arteck Accused Products purportedly indicates that the products are "Made in China."

3. Autown

292. Responding to paragraph 292, Boltpower admits that Boltpower manufactured certain products bearing model numbers RP-PI-01, RP-PI02, RP-PI-03, and RP-PI-04 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

293. Responding to paragraph 293, Boltpower admits that Boltpower manufactured certain products bearing model numbers RP-PI-01, RP-PI02, RP-PI-03, and RP-PI-04 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

294. Responding to paragraph 294, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

295. Responding to paragraph 295, Boltpower admits that the packaging of the Autown Accused Products purportedly indicates that the products are "Made in China."

4. Battery Tender

296. Responding to paragraph 296, Boltpower admits that Boltpower manufactured certain products bearing model numbers 030-1011-WAL (1000A/8000mAh), 030-1011-WH

(1000A/8000mAh), 030-1000-PM (600A/6000mAh), and 030-1010-WH (800A/7200mAh) outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

297. Responding to paragraph 297, Boltpower admits that Boltpower manufactured certain products bearing model numbers 030-1011-WAL (1000A/8000mAh), 030-1011-WH (1000A/8000mAh), 030-1000-PM (600A/6000mAh), and 030-1010-WH (800A/7200mAh) outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

298. Responding to paragraph 298, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

299. Responding to paragraph 299, Boltpower admits that the packaging of the Battery Tender Accused Products purportedly indicates that the products are "Made in China."

5. Beatit

300. Responding to paragraph 300, Boltpower admits that Boltpower manufactured certain products bearing model numbers B10 Pro (800A), B7 (1200A), BP101 (2200A), D11 (800A), G18 (2000A), and G22 (1500A) outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

301. Responding to paragraph 301, Boltpower admits that Boltpower manufactured certain products bearing model numbers B10 Pro (800A), B7 (1200A), BP101 (2200A), D11 (800A), G18 (2000A), and G22 (1500A) outside the U.S. Boltpower lacks sufficient information

to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

302. Responding to paragraph 302, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

303. Responding to paragraph 303, Boltpower admits that the packaging of the Beatit Accused Products purportedly indicates that the products are "Made in China."

6. Boltpower

304. Responding to paragraph 304, Boltpower admits that Boltpower manufactured certain products bearing model numbers A7P, D28, D29, G33A, and N02 outside the U.S. Boltpower denies the remaining allegations in this paragraph.

305. Responding to paragraph 305, Boltpower admits that Boltpower manufactured certain products bearing model numbers A7P, D28, D29, G33A, and N02 outside the U.S. Boltpower denies the remaining allegations in this paragraph.

306. Responding to paragraph 306, Boltpower denies that it sold after importation any accused products into the United States. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies each and every remaining allegation.

307. Responding to paragraph 307, Boltpower admits that the packaging of the Boltpower Accused Products purportedly indicates that the products are "Made in China."

7. DB Power/Valuelink

308. Responding to paragraph 308, Boltpower admits that Boltpower manufactured certain products bearing model numbers DJS80, G15, G16, A09, DJS40, DJS50, DJS50

(800A/18000mAh), DJS60, G09D, and N01 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

309. Responding to paragraph 309, Boltpower admits that Boltpower manufactured certain products bearing model numbers DJS80, G15, G16, A09, DJS40, DJS50, DJS50 (800A/18000mAh), DJS60, G09D, and N01 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

310. Responding to paragraph 310, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

311. Responding to paragraph 311, Boltpower admits that the packaging of the DB Power Accused Products purportedly indicates that the products are "Made in China."

8. DieHard

312. Responding to paragraph 312, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

313. Responding to paragraph 313, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

314. Responding to paragraph 314, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

315. Responding to paragraph 315, Boltpower admits that the packaging of the DieHard Accused Products purportedly indicates that the products are "Made in China."

9. Duralast

316. Responding to paragraph 316, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

317. Responding to paragraph 317, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

318. Responding to paragraph 318, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

319. Responding to paragraph 319, Boltpower admits that the packaging of the Duralast Accused Products purportedly indicates that the products are "Made in China."

10. EverStart

320. Responding to paragraph 320, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

321. Responding to paragraph 321, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

322. Responding to paragraph 322, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

323. Responding to paragraph 323, Boltpower admits that the packaging of the EverStart Accused Products purportedly indicates that the products are "Made in China."

11. Fconegy

324. Responding to paragraph 324, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

325. Responding to paragraph 325, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

326. Responding to paragraph 326, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

327. Responding to paragraph 327, Boltpower admits that the packaging of the Fconegy Accused Products purportedly indicates that the products are "Made in China."

12. Flylinktech

328. Responding to paragraph 328, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

329. Responding to paragraph 329, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

330. Responding to paragraph 330, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

331. Responding to paragraph 331, Boltpower admits that the packaging of the Flylinktech Accused Products purportedly indicates that the products are "Made in China."

13. Imazing

332. Responding to paragraph 332, Boltpower admits that Boltpower manufactured certain products bearing model numbers IM23, IM25, IM27/G26, IM29/G29, and IM31 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

333. Responding to paragraph 333, Boltpower admits that Boltpower manufactured certain products bearing model numbers IM23, IM25, IM27/G26, IM29/G29, and IM31 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

334. Responding to paragraph 334, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

335. Responding to paragraph 335, Boltpower admits that the packaging of the Imazing Accused Products purportedly indicates that the products are "Made in China."

14. Jumtop

336. Responding to paragraph 336, Boltpower admits that Boltpower manufactured certain products bearing model number N12 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

337. Responding to paragraph 337, Boltpower admits that Boltpower manufactured certain products bearing model number N12 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

338. Responding to paragraph 338, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

339. Responding to paragraph 339, Boltpower admits that the packaging of the Jumtop Accused Products purportedly indicates that the products are "Made in China."

15. KTI (K-Tool International)

340. Responding to paragraph 340, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

341. Responding to paragraph 341, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

342. Responding to paragraph 342, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

343. Responding to paragraph 343, Boltpower admits that the packaging of the K-Tool Accused Products purportedly indicates that the products are "Made in China."

16. Lemsir

344. Responding to paragraph 344, Boltpower admits that Boltpower manufactured certain products bearing model numbers L6 (800A/10800mAh), V1 (2000A/21000mAh), V2 (1500A/15600mAh), V3 (2200A/21000mAh), and V8 (800A/12800mAh) outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

345. Responding to paragraph 345, Boltpower admits that Boltpower manufactured certain products bearing model numbers L6 (800A/10800mAh), V1 (2000A/21000mAh), V2

(1500A/15600mAh), V3 (2200A/21000mAh), and V8 (800A/12800mAh) outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

346. Responding to paragraph 346, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

347. Responding to paragraph 347, Boltpower admits that the packaging of the Lemsir Accused Products purportedly indicates that the products are "Made in China."

17. Loftek

348. Responding to paragraph 348, Boltpower admits that Boltpower manufactured certain products bearing model numbers Y29 and G21 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

349. Responding to paragraph 349, Boltpower admits that Boltpower manufactured certain products bearing model numbers Y29 and G21 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

350. Responding to paragraph 350, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

351. Responding to paragraph 351, Boltpower admits that the packaging of the Loftek Accused Products purportedly indicates that the products are "Made in China."

18. Matco Tools

352. Responding to paragraph 352, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

353. Responding to paragraph 353, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

354. Responding to paragraph 354, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

355. Responding to paragraph 355, Boltpower admits that the packaging of the Matco Accused Products purportedly indicates that the products are "Made in China."

19. Nexpow

356. Responding to paragraph 356, Boltpower admits that Boltpower manufactured certain products bearing model number G17 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

357. Responding to paragraph 357, Boltpower admits that Boltpower manufactured certain products bearing model number G17 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

358. Responding to paragraph 358, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

359. Responding to paragraph 359, Boltpower admits that the packaging of the Nexpow Accused Products purportedly indicates that the products are "Made in China."

20. PowerCache

360. Responding to paragraph 360, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

361. Responding to paragraph 361, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

362. Responding to paragraph 362, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

363. Responding to paragraph 363, Boltpower admits that the packaging of the PowerCache Accused Products purportedly indicates that the products are "Made in China."

21. Roav

364. Responding to paragraph 364, Boltpower admits that Boltpower manufactured certain products bearing model numbers Pro 1000A and Pro 800 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

365. Responding to paragraph 365, Boltpower admits that Boltpower manufactured certain products bearing model numbers Pro 1000A and Pro 800 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

366. Responding to paragraph 366, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

367. Responding to paragraph 367, Boltpower admits that the packaging of the Roav Accused Products purportedly indicates that the products are "Made in China."

22. Sanrock

368. Responding to paragraph 368, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

369. Responding to paragraph 369, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

370. Responding to paragraph 370, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

371. Responding to paragraph 371, Boltpower admits that the packaging of the Sanrock Accused Products purportedly indicates that the products are "Made in China."

23. Schumacher

372. Responding to paragraph 372, Boltpower admits that Boltpower manufactured certain products bearing model numbers SL1312 (600A), SL1314 (600A), SL1315 (800A), SL1317 (1000A), SL1327 (800A), and SL 1396 (800A) outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

373. Responding to paragraph 373, Boltpower admits that Boltpower manufactured certain products bearing model numbers SL1312 (600A), SL1314 (600A), SL1315 (800A), SL1317 (1000A), SL1327 (800A), and SL 1396 (800A) outside the U.S. Boltpower lacks

sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

374. Responding to paragraph 374, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

375. Responding to paragraph 375, Boltpower admits that the packaging of the Schumacher Accused Products purportedly indicates that the products are "Made in China."

24. Tooliom

376. Responding to paragraph 376, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

377. Responding to paragraph 377, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

378. Responding to paragraph 378, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

379. Responding to paragraph 379, Boltpower admits that the packaging of the Tooliom Accused Products purportedly indicates that the products are "Made in China."

25. Topdon

380. Responding to paragraph 380, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

381. Responding to paragraph 381, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

382. Responding to paragraph 382, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

383. Responding to paragraph 383, Boltpower admits that the packaging of the Topdon Accused Products purportedly indicates that the products are "Made in China."

26. Topvision

384. Responding to paragraph 384, Boltpower admits that Boltpower manufactured certain products bearing model number G26 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

385. Responding to paragraph 385, Boltpower admits that Boltpower manufactured certain products bearing model number G26 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

386. Responding to paragraph 386, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

387. Responding to paragraph 387, Boltpower admits that the packaging of the Topvision Accused Products purportedly indicates that the products are "Made in China."

27. Trekpow

388. Responding to paragraph 388, Boltpower admits that Boltpower manufactured certain products bearing model numbers A18 and G22 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

389. Responding to paragraph 389, Boltpower admits that Boltpower manufactured certain products bearing model numbers A18 and G22 outside the U.S. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

390. Responding to paragraph 390, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

391. Responding to paragraph 391, Boltpower admits that the packaging of the Trekpow Accused Products purportedly indicates that the products are "Made in China."

28. Vavofo

392. Responding to paragraph 392, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

393. Responding to paragraph 393, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

394. Responding to paragraph 394, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

395. Responding to paragraph 395, Boltpower admits that the packaging of the Vavofo Accused Products purportedly indicates that the products are "Made in China."

29. Vekkia

396. Responding to paragraph 396, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

397. Responding to paragraph 397, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

398. Responding to paragraph 398, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

399. Responding to paragraph 399, Boltpower admits that the packaging of the Vekkia Accused Products purportedly indicates that the products are "Made in China."

30. Yaber

400. Responding to paragraph 400, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies those allegations.

401. Responding to paragraph 401, Boltpower denies the allegations regarding Boltpower. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

402. Responding to paragraph 402, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

403. Responding to paragraph 403, Boltpower admits that the packaging of the Yaber Accused Products purportedly indicates that the products are "Made in China."

C. Smartech Brands

1. Smartech

404. Responding to paragraph 404, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

405. Responding to paragraph 405, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

406. Responding to paragraph 406, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

407. Responding to paragraph 407, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

D. Weego Brands

1. Weego

408. Responding to paragraph 408, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

409. Responding to paragraph 409, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

410. Responding to paragraph 410, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

411. Responding to paragraph 411, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

E. Winplus Brands

1. Type S

412. Responding to paragraph 412, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

413. Responding to paragraph 413, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

414. Responding to paragraph 414, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

415. Responding to paragraph 415, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Winplus

416. Responding to paragraph 416, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

417. Responding to paragraph 417, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

418. Responding to paragraph 418, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

419. Responding to paragraph 419, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

F. Great Neck Brands

1. OEM Tools

420. Responding to paragraph 420, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

421. Responding to paragraph 421, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

422. Responding to paragraph 422, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

423. Responding to paragraph 423, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

G. ThiEye Brands

1. Buture

424. Responding to paragraph 424, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

425. Responding to paragraph 425, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

426. Responding to paragraph 426, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

427. Responding to paragraph 427, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Fnnemge

428. Responding to paragraph 428, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

429. Responding to paragraph 429, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

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430. Responding to paragraph 430, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

431. Responding to paragraph 431, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

3. Utrai

432. Responding to paragraph 432, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

433. Responding to paragraph 433, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

434. Responding to paragraph 434, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

435. Responding to paragraph 435, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

H. Energen & Performance Tool Brands

1. Energen

436. Responding to paragraph 436, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

437. Responding to paragraph 437, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

438. Responding to paragraph 438, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

439. Responding to paragraph 439, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

2. Performance Tool

440. Responding to paragraph 440, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

441. Responding to paragraph 441, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

442. Responding to paragraph 442, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

443. Responding to paragraph 443, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

I. Halo Brands

1. HALO

444. Responding to paragraph 444, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

445. Responding to paragraph 445, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

446. Responding to paragraph 446, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

447. Responding to paragraph 447, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

J. Clore Brands

1. Jump-N-Carry

448. Responding to paragraph 448, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

449. Responding to paragraph 449, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

450. Responding to paragraph 450, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

451. Responding to paragraph 451, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

VIII. HARMONIZED TARIFF SCHEDULE ITEM NUMBERS

452. Responding to paragraph 452, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

IX. DOMESTIC INDUSTRY

453. Responding to paragraph 453, Boltpower denies a domestic industry exists in the U.S. with respect to the Asserted Patents. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

A. Technical Prong

454. Responding to paragraph 454, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

455. Responding to paragraph 455, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

456. Responding to paragraph 456, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

B. Economic Prong

457. Responding to paragraph 457, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

458. Responding to paragraph 458, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

459. Responding to paragraph 459, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

460. Responding to paragraph 460, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

461. Responding to paragraph 461, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

462. Responding to paragraph 462, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

X. RELATED LITIGATION

463. Responding to paragraph 463, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

464. Responding to paragraph 464, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

465. Responding to paragraph 465, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

466. Responding to paragraph 466, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

XI. GEO

467. Responding to paragraph 467, Boltpower denies that a general exclusion order is required. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

468. Responding to paragraph 468, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

469. Responding to paragraph 469, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

470. Responding to paragraph 470, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

471. Responding to paragraph 471, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

472. Responding to paragraph 472, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

473. Responding to paragraph 473, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

474. Responding to paragraph 474, Boltpower lacks sufficient information to admit or deny the allegations in this paragraph, and on that basis denies each and every allegation.

XII. REQUESTED RELIEF

475. Responding to paragraph 475, Boltpower denies it has infringed or will continue to infringe the Asserted Patents or Asserted Trademarks. Boltpower lacks sufficient information to admit or deny the remaining allegations in this paragraph, and on that basis denies those allegations.

476. Responding to paragraph 476, Boltpower states:

a) Responding to paragraph a), Boltpower's response is that the Complaint is unfounded, and the relief requested by NOCO should be denied in its entirety.

b) Responding to paragraph b), Boltpower's response is that the Complaint is unfounded, and the relief requested by NOCO should be denied in its entirety.

c) Responding to paragraph c), Boltpower's response is that the Complaint is unfounded, and the relief requested by NOCO should be denied in its entirety.

d) Responding to paragraph d), Boltpower's response is that the Complaint is unfounded, and the relief requested by NOCO should be denied in its entirety.

e) Responding to paragraph e), Boltpower's response is that the Complaint is unfounded, and the relief requested by NOCO should be denied in its entirety.

f) Responding to paragraph f), Boltpower's response is that the Complaint is unfounded, and the relief requested by NOCO should be denied in its entirety.

RESPONDENT'S DEFENSES

Respondent sets forth below certain defenses to the allegations in the Complaint, based on the information available to Respondent at this time. Respondent notes that discovery in this investigation is at a very early stage, and Respondent's analysis of its defenses is continuing. Moreover, the parties have not yet exchanged claim constructions, and the Commission has not construed the claims of the asserted patents. Accordingly, Respondent reserves the right to assert additional defenses as this investigation proceeds. Moreover, Respondent, by identifying the following defenses, does not admit that they have the burden of proof with respect to any of those defenses.

FIRST DEFENSE
(No Unfair Act/Unfair Competition)

1. Respondent has not committed an unfair act and has not engaged in any unfair competition. And Respondent has not imported, sold for importation, or sold any accused products in United States.

SECOND DEFENSE
(Non-Infringement)

2. Respondent does not directly infringe, indirectly infringe, contribute to infringement, or induce infringement of any valid and enforceable claim of the Asserted Patents, either literally or under the doctrine of equivalents.

3. Respondent has not imported, sold for importation, or sold any accused products in United States.

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4. Additionally, for non-limiting examples, Respondent's accused products do not perform at least the following claim elements of the independent claims:

U.S. Patent No. 9,007,015

Claim 1	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
Claim 1	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 and to provide an output signal indicating whether positive and negative terminals of said vehicle battery are properly connected with said positive and negative polarity outputs of said output port.
Claim 1	a power switch connected between said internal power supply and said output port; and
Claim 1	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 switch, such that said power switch is turned on to cause said internal power supply to be connected 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, and is not turned on when signals from said sensors indicate either the absence of a vehicle battery at said output port or improper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs

U.S. Patent No. 10,604,024

Claim 1	a vehicle battery isolation sensor connected in circuit with the positive and negative polarity vehicle battery terminal connectors, the vehicle battery isolation sensor configured to detect a presence of the vehicle battery when connected between the positive and negative polarity vehicle battery terminal connectors
Claim 1	a reverse polarity sensor connected in circuit with the positive and negative polarity vehicle battery terminal connectors, the reverse polarity sensor configured to detect a polarity of the vehicle battery connected between the positive and negative polarity vehicle battery terminal connectors and to provide an output signal indicating that the positive and negative polarity terminals of the vehicle battery are properly connected to the positive and negative polarity vehicle battery connectors;
Claim 1	a microcontroller configured to receive input signals from the vehicle isolation sensor and the reverse polarity sensor, the microcontroller is configured to provide an activating output signal to turn on the power switch to cause the power supply to be connected to the positive and negative polarity vehicle battery connectors in response to the microcontroller receiving input signals simultaneously from the sensors indicating both the presence and connection of the vehicle battery to the positive and negative polarity vehicle battery connectors and proper polarity connection of the positive and negative polarity terminals of the vehicle battery with the positive and negative polarity battery terminal connectors, and the microcontroller is configured to provide a deactivating output signal to turn off the power switch to cause the power supply to

	be disconnected from the positive and negative polarity vehicle battery connectors in response to the microcontroller receiving input signals from the sensors indicating the absence of the vehicle battery connected to the positive and negative polarity vehicle battery connectors and/or improper polarity connection of the positive and negative polarity terminals of the vehicle battery to the positive and negative polarity vehicle battery connectors.
Claim 29	a vehicle battery isolation sensor connected in circuit with the positive and negative polarity vehicle battery terminal connectors, the vehicle battery isolation sensor configured to detect a presence of the vehicle battery when connected between the positive and negative polarity vehicle battery terminal connectors
Claim 29	a reverse polarity sensor connected in circuit with the positive and negative polarity vehicle battery terminal connectors, the reverse polarity sensor configured to detect a polarity of the vehicle battery connected between the positive and negative polarity vehicle battery terminal connectors and to provide an output signal indicating that the positive and negative polarity terminals of the vehicle battery are properly connected to the positive and negative polarity vehicle battery connectors.
Claim 29	a microcontroller configured to receive input signals from the vehicle isolation sensor and the reverse polarity sensor, the microcontroller configured to control operation of the power switch, wherein the microcontroller is configured to turn on the power switch when receiving input signals from the vehicle isolation sensor and reverse polarity sensor indicating both the presence and connection of the vehicle battery to the positive and negative polarity vehicle battery connectors and proper polarity connection of the positive

	and negative polarity terminals of the vehicle battery with the positive and negative polarity battery terminal connectors, and wherein the microcontroller is configured to turn off the power switch when receiving input signals from the sensors indicating the absence of the vehicle battery connected to the positive and negative polarity vehicle battery connectors and/or improper polarity connection of the positive and negative polarity terminals of the vehicle battery to the positive and negative polarity vehicle battery connectors.
Claim 30	a vehicle battery isolation sensor connected in circuit with the positive and negative polarity vehicle battery terminal connectors, the vehicle battery isolation sensor configured to detect a presence of the vehicle battery when connected between the positive and negative polarity vehicle battery terminal connectors.
Claim 30	a reverse polarity sensor connected in circuit with the positive and negative polarity vehicle battery terminal connectors, the reverse polarity sensor configured to detect a polarity of the vehicle battery connected between the positive and negative polarity vehicle battery terminal connectors and to provide an output signal indicating that the positive and negative polarity terminals of the vehicle battery are properly connected to the positive and negative polarity vehicle battery connectors.
Claim 30	a microcontroller configured to receive input signals from the vehicle isolation sensor and the reverse polarity sensor, the microcontroller is configured to turn on the power switch to cause the power supply to be connected to the positive and negative polarity vehicle battery connectors in response to the microcontroller receiving input signals simultaneously from the sensors indicating both the presence and connection of the

	vehicle battery to the positive and negative polarity vehicle battery connectors and proper polarity connection of the positive and negative polarity terminals of the vehicle battery with the positive and negative polarity battery terminal connectors, and the microcontroller is configured to turn off the power switch to prevent the power supply from being connected to the positive and negative polarity vehicle battery connectors in response to the microcontroller not receiving the input signals simultaneously from the sensors indicating both the presence and connection of the vehicle battery to the positive and negative polarity vehicle battery connectors and proper polarity connection of the positive and negative polarity terminals of the vehicle battery with the positive and negative polarity battery terminal connectors.

5. No dependent claim can be infringed if the independent claim from which it depends is not infringed. Since no independent claim of the Asserted Patents is infringed, no dependent claim is infringed either. This includes at least asserted claims 4, 11, 14, 18, 19, and 21 of the '015 patent and claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 patent.

THIRD DEFENSE
(Invalidity)

6. The asserted claims of the Asserted Patents are invalid under 35 U.S.C. §§ 101, 102, 103, 112, 115, 116, and/or 256. Respondent's investigation of the prior art and potential defenses in this Investigation is continuing.

7. For example, all of the asserted claims are invalid under 35 U.S.C. §102 and/or §103 in view of at least any reference listed on the face of the patents, any reference cited or referred to in the prosecution histories of the patents at issue, foreign counterparts to those

patents, and related U.S. and foreign patents, the Notice of Prior Art filed in this investigation, any prior art referenced in any submission in any prior litigation and/or *Inter Partes* review proceeding against either Asserted Patent, and/or the following prior art, either individually or in combination, and any prior art related to the following prior art:

U.S. Patent No. 9,954,391 to Lei;

U.S. Patent No. 9,525,297 to Wang;

U.S. Patent No. 9,506,446 to Xinfang;

U.S. Patent No. 8,172,603 to Richardet;

U.S. Patent No. 8,076,900 to Brown;

U.S. Patent No. 7,345,450 to Krieger et. al;

U.S. Patent No. 7,095,339 to Peng et al;

U.S. Patent No. 6,426,606 to Purkey;

U.S. Patent No. 6,424,158 to Klang;

U.S. Patent No. 5,793,185 to Prelec et al;

U.S. Patent No. 5,650,974 to Yoshimura;

U.S. Patent No. 5,496,658 to Hein et al;

U.S. Patent No. 5,319,298 to Wanzong et al;

U.S. Patent No. 3,267,452 to Wolf ;

U.S. Patent No. 3,085,187 to Godshalk;

U.S. Patent No. 3,105,183 to Hysler et al;

U.S. Patent Application Publication No. 2013/0314041 to Proebstle;

U.S. Patent Application Publication No. 2013/0241488 to Dao;

U.S. Patent Application Publication No. 2013/0154543 to Richardson et al;

U.S. Patent Application Publication No. 2012/0091944 to Rogers

U.S. Patent Application Publication No. 2009/0174362 to Richardson et al;

U.S. Patent Application Publication No. 2007/0285049 to Krieger et al;

U.S. Patent Application Publication No. 2005/0252573 to Montani;

U.S. Patent Application Publication No. 2005/0110467 to Thomason;

U.S. Patent Application Publication No. 2005/0040788 to Tseng;

U.S. Patent Application Publication No. 2004/0130298 to Krieger et al;

Chinese Patent No. 202696190 to Zhang;

WO Publication No. 2013-137873 to Dao;

WO Publication No. 2010/129723 to Baxter et al;

Japanese Patent No. 2013137873A to Hirose et. al.;

USB Battery Charging Specification Version 1.2;

E-flite EC Connector Assembly Instructions 2008;

Datasheet for LM7805 Voltage Regulator from Fairchild Semiconductor;

Carku Product Brochure for the Epower-20 jump starter product;

Carku Product Brochure for the Epower-21 jump starter product;

MC78XX/LM78XX/MC78XXA 3-Terminal 1A Positive Voltage Regulator from Fairchild Semiconductor Corporation 2001.

8. Respondent also incorporates by reference all prior art in any other Respondents' response to the Complaint and/or discovery responses.

9. Respondent is continuing to seek further prior art and reserves the right to refine its positions regarding invalidity according to the appropriate dates on the procedural schedule of this Investigation, once issued.

FOURTH DEFENSE
(Lack of Written Description)

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10. The Asserted Claims of the Asserted Patents are invalid under 35 U.S.C. § 112 (a) because the Asserted Patents fails to contain a sufficient written description of the alleged inventions set forth in the claims.

FIFTH DEFENSE
(Lack of Enablement)

11. The asserted claims of the Asserted Patents are invalid under 35 U.S.C. § 112 (a) because the Asserted Patents fails to disclose the manner and process of making and using the alleged inventions set forth in the claims, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same.

SIXTH DEFENSE
(Indefiniteness)

12. The asserted claims of the Asserted Patents are invalid under the second paragraph of 35 U.S.C. § 112 (b) for failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention.

SEVENTH DEFENSE
(Prosecution History Estoppel and/or Disclaimer)

13. On information and belief, NOCO's claims are barred in whole or in part by the doctrine of estoppel, including equitable estoppel and prosecution history estoppel. For example, NOCO disclaimed during prosecution of the Asserted Patents, and/or while defending against IPR proceedings, products that use only one sensor circuit and send one signal to the MCU in favor of claiming two sensors/two signals design,

EIGHTH DEFENSE
(Inequitable conduct / Unclean hands)

14. On information and belief, the NOCO is barred from asserting the Asserted Patents by the doctrine of unclean hands. For example, NOCO has alleged infringement by competitors' products and/or design-around products that NOCO knows or should know use features that NOCO disclaimed during prosecution of the Asserted Patents and/or while defending against IPR proceedings. Specifically, products that use only one sensor circuit and send one signal to the MCU, while NOCO distinguished their invention from prior art by claiming the two sensors/two signals design during prosecution,

NINTH DEFENSE
(Lack of a Domestic Industry)

15. On information and belief, NOCO has not adequately alleged and cannot prove the existence of a domestic industry as required under 19 U.S.C. § 1337(a)(2)-(3), in connection with the Asserted Patents. Specifically, Complainant fails to demonstrate that they have made significant investments in plant and equipment, significant employment of labor and capital, and/or substantial investments in exploitation of the Asserted Patents.

TENTH DEFENSE
(Inventorship)

16. On information and belief, the Asserted Patents are invalid under 35 U.S.C. § 115 (a) for failure to name the actual inventors and/or to name proper co-inventors.

ELEVENTH AFFIRMATIVE DEFENSE
(Incorporation and Reservation)

17. Respondent hereby adopts and incorporates by reference any other defenses raised by any of the other respondents in this investigation and reserves the right to assert additional defenses as they are discovered throughout the course of this Investigation.

REQUEST FOR RELIEF

All allegations in the Complaint which are not specifically admitted as set forth above are hereby denied.

WHEREFORE, with respect to the relief requested by Complainant, Boltpower responds that the Complaint is unfounded, and the relief requested by Complainant should be denied in its entirety. Specifically, Boltpower requests that the Commission:

A. Deny all relief requested in the Complaint;

B. Find that Boltpower has not violated Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337;

C. Find that the Accused Products do not infringe the Asserted Patents;

D. Find that the Asserted Patents are invalid for failing to comply with the requirements of patentability as set forth in at least 35 U.S.C. §§ 102, 103, 112, and/or 256;

E. Find the domestic industry requirement is not shown for the Asserted Patents;

F. Dismiss the present Complaint and terminate the Investigation;

G. Award such other and further relief as the Commission deems just and proper.

STATEMENT PURSUANT TO 19 C.F.R. § 210.13(b)

Boltpower provides certain information, as a retailer, in the concurrently-submitted Confidential Exhibit A, attached, as required by 19 C.F.R. § 210.13(b). Boltpower specifically denies that any of the information or supplied data refers or relates to any allegations of unfair acts under Section 337 or otherwise, and Boltpower denies that any of its products infringe the Asserted Patents or otherwise constitute a violation of Section 337.

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Dated: April 19, 2021

Respectfully submitted,

/s/ P. Andrew Riley

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Counsel for Respondent Guangdong Boltpower Energy Co., Ltd.

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VERIFICATION

I, Xiaopeng Liao, am authorized to make this verification on behalf of Guangdong Boltpower Energy Co., Ltd., and hereby verify that I have read "RESPONSE OF GUANGDONG BOLTPOWER ENERGY CO., LTD. TO THE FIRST AMENDED COMPLAINT AND THE NOTICE OF INVESTIGATION." Although I do not have personal knowledge of all the facts contained therein, I hereby declare under penalty of perjury that they are true to the best of my knowledge, information and belief.

Dated: April 19, 2021

Signature: _____

Xiaopeng Liao
Sales Manager

CERTIFICATE OF SERVICE

I, Jiwei Zhang, hereby certify that on April 19, 2021, a copy of the foregoing document was filed and served as indicated:

The Honorable Lisa R. Barton Secretary to the Commission U. S. International Trade Commission 500 E Street, S.W., Room 112 Washington, D.C. 20436	☐ Via Hand Delivery (2 copies) ☐ Via U.S. Mail ☐ Via Overnight Mail ☐ Via Electronic Mail ☒ Via Electronic Docket Filing
The Honorable Clark S. Cheney Administrative Law Judge U.S. International Trade Commission 500 E Street, S.W. Washington, D.C. 20436 Cheney337@usitc.gov	☐ Via Hand Delivery (2 copies) ☐ Via U.S. Mail ☐ Via Overnight Mail ☒ Via Electronic Mail
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/s/ Jiwei Zhang
Jiwei Zhang

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CONFIDENTIAL BUSINESS INFORMATION SUBJECT TO PROTECTIVE ORDER

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable David P. Shaw
Administrative Law Judge

In the Matter of **CERTAIN PORTABLE BATTERY JUMP STARTERS AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1256**

RESPONDENTS' INITIAL INVALIDITY CONTENTIONS

Pursuant to the Procedural Schedule (Order No. 8) in this Investigation, Respondents AutoZone, Inc., Best Parts, Inc., Deltran USA, LLC, Schumacher Electric Corporation, Schumacher Power Technology Ltd., Walmart Inc., Clore Automotive, LLC, Halo2Cloud, LLC, ZAGG Inc., QVC, Inc., Shenzhen Carku Technology Co., Ltd., 70mai Co., Ltd., Antigravity Batteries LLC, Gooloo Technologies LLC, Shenzhen Gooloo E-Commerce Co., Ltd., Horizon Tool, Inc., Great Neck Saw Manufacturers, Inc., Matco Tools Corporation, Nekteck, Inc., Paris Corporation, PowerMax Battery (U.S.A.), Inc., Guangdong Boltpower Energy Co., Ltd., Best Buy Co., Inc., Anker Innovations Ltd. (HK), Winplus North America, Inc., ADC Solutions Auto, LLC d/b/a Type-S, and Winplus NA, LLC (collectively, "Respondents") hereby provide their initial invalidity contentions in response to Complainant The NOCO Company's ("NOCO") Interrogatory No. 17.

I. Overview

On May 19, 2021, NOCO served its Second Amended Complaint. In the Complaint, NOCO alleged that Respondents infringe one or more of claims 1, 4, 10, 11, 14, 18, 19, and 21 of U.S. Patent No. 9,007,015 (the "'015 Patent") and claims 1, 4-6, 16, 19, 23, 24, 26, 29, and 30 of U.S. Patent No. 10,604,024 (the "'024 Patent") (collectively, the "Asserted Claims").

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are intended to be representative of those other patents or publications to the extent they exist and include all earlier published and/or filed related and/or incorporated references disclosed in those documents. Respondents accordingly reserve the right to modify, amend, or supplement these contentions with those related patents or patent applications, as well as other prior art references, upon further investigation.

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
U.S.	2015/0137740	Allos	System and Method for Mobile Charging	11/13/2013*	5/21/2015
WO	2012/080996	Tracy	A JUMP STARTER	12/16/2010*	6/21/2012
U.S.	2005/0116688	YIN	Power source with an anti-reverse connection and short circuit protection circuit for starting motor vehicles	11/28/2003*	6/2/2005
U.S.	2006/0220610	Solberg	Power management controller	4/5/2005	10/5/2006
EP	0 616 409	Herbert	Portable electrical power supply	9/21/1994	9/21/1994
U.S.	2004/0239290	Krieger	Combination jump starter and high frequency charger	3/21/2003*	12/2/2004
U.S.	2003/0141845	Krieger	High frequency battery charger and method of operating same	1/25/2002*	7/31/2003
U.S.	6,822,425	Krieger	High frequency battery charger and method of operating same	1/25/2002*	11/23/2004
U.S.	2014/0368155	Chen	Smart vehicle rescue battery apparatus	6/18/2013	12/18/2014
U.S.	2006/0176011	Lui	Battery charger with polarity switching capability	2/7/2005	8/10/2006

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
U.S.	2001/0025618	Kelling	Capacitive remote vehicle starter	3/24/2000*	10/4/2001
U.S.	6,679,212	Kelling	Capacitive remote vehicle starter	3/24/2000*	1/20/2004
U.S.	2014/0084844	Weflen	Self-contained automotive battery booster system	9/23/2013*	3/27/2014
U.S.	9,809,183	Weflen	Self-contained automotive battery booster system	9/23/2013*	11/7/2017
U.S.	2004/0150373	Chan	Vehicle jump starter with polarity compensation	1/30/2003	8/5/2004
U.S.	2012/0025766	Reade	Charging Apparatus and Portable Power Supply	7/27/2010*	2/2/2012
U.S.	9,153,978	Reade	Charging Apparatus and Portable Power Supply	7/27/2010*	10/6/2015
U.S.	2006/0244412	Bonzer	Automotive jump-starter with polarity detection, current routing circuitry and lighted cable connection pairs	5/2/2005	11/2/2006
U.S.	6,759,833	Chen	Charger capable of switching polarity	5/6/2003	7/6/2004
U.S.	3,590,357	Reid	Battery booster	11/5/1969	6/29/1971
U.S.	5,194,799	Tomant-schger	Booster battery assembly	3/11/1991	3/16/1993
U.S.	2014/0210399	Urschel	Portable electric power source for aircraft	1/25/2013	7/31/2014
U.S.	3,638,108	Channing	Method of testing an automobile battery and electrical system while in circuit, using a booster battery	4/28/1969	1/25/1972
WO	2012/036556	Eidsvig	Device for charging of rechargeable batteries	9/13/2010*	3/22/2012**

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
U.S.	2015/0306964	Wang	Automobile charger	4/28/2014*	10/29/2015
U.S.	9,525,297	Wang	Automobile charger	4/28/2014*	12/20/2016
WO	2011/113734	Reichow	On-board electrical system for a vehicle	3/13/2010*	9/22/2011**
U.S.	2013/0162029	Reichow	On-board electrical system for a vehicle	3/13/2010*	6/27/2013
U.S.	9,243,601	Reichow	On-board electrical system for a vehicle	3/13/2010*	1/26/2016
U.S.	6,650,086	Chang	Automatic detecting and switching vehicle charger	11/26/2002	11/18/2003
U.S.	6,147,471	Hunter	Single-point direct current connector	10/1/1999	11/14/2000
U.S.	2004/0130298	Krieger	Microprocessor controlled booster apparatus with polarity protection	2/19/2002*	7/8/2004
U.S.	7,345,450	Krieger	Microprocessor controlled booster apparatus with polarity protection	2/19/2002*	3/18/2008
U.S.	2002/0041174	Purkey	Apparatus for providing supplemental power to an electrical system and related methods	10/10/2000*	4/11/2002
U.S.	6,426,606	Purkey	Apparatus for providing supplemental power to an electrical system and related methods	10/10/2000*	7/30/2002
U.S.	6,344,733	Crass	Portable jump-starting battery pack with charge monitoring system	1/31/2000*	2/5/2002
U.S.	5,281,904	Tomkins	Multi mode cordless battery charger	9/29/1992	1/25/1994
U.S.	2015/0054336	Liu Xinfang	Mobile power bank	8/23/2013*	2/26/2015
U.S.	9,506,446	Liu Xinfang	Mobile power bank	8/23/2013*	11/29/2016

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
WO	2014/106407	Lei	Emergency power source	1/7/2013*	10/7/2014**
U.S.	2015/0340907	Lei	Emergency power source	1/7/2013*	11/26/2014
U.S.	9,954,391	Lei	Emergency power source	1/7/2013*	4/24/2018
U.S.	2008/0143290	Chavakula	Multi-Power Charger and Battery Backup System	12/19/2006	7/19/2008
U.S.	7,893,657	Chavakula	Multi-Power Charger and Battery Backup System	12/19/2006	2/22/2011
U.S.	2011/0175461	Tinaphong	Method and apparatus for harvesting energy	1/7/2010	7/21/2011
U.S.	8,362,745	Tinaphong	Method and apparatus for harvesting energy	1/7/2010	1/29/2013
U.S.	2013/0154543	Richardson	Method and apparatus for providing supplemental power to an engine	5/6/2009	6/20/2013
U.S.	6,424,158	Klang	Apparatus and method for carrying out diagnostic tests on batteries and for rapidly charging batteries	7/27/1998	7/23/2002
WO	2010/129723	Baxter	Low-voltage connection with safety circuit and method for determining proper connection polarity	5/5/2009	11/11/2010
U.S.	8,172,603	Richardet	Quick-release battery cable system	3/16/2009	5/8/2012

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
CN	202696190	Zhang	Intelligent emergent start power source with self-equipped voice prompt function	5/23/2012	1/23/2013
CN	203211234	Yu	An Automobile Emergency Jump Starter	4/26/2013	9/25/2013
U.S.	6,891,350	George	Jump Start and Reverse Battery Protection Circuit	10/2/2002	5/10/2005
U.S.	6,803,743	George	Jump Start and Reverse Battery Protection Circuit	10/2/2002	10/12/2004
EP	2472698	Graf	On-board power supply system and protection method	12/30/2010	7/4/2012
US	3,933,140	Gynn	Capacitive discharge ignition adapter	7/25/1973	1/20/1976
US	4,740,740	Cullen	Method and apparatus for the automatic connection of battery cables	10/20/1986	4/26/1988
US	4,885,524	Wilburn	Vehicle battery system	4/15/1988	12/5/1989
US	4,910,628	Esaki	Terminal unit in information transmission system	11/13/1987	3/20/1990
US	4,972,135	Bates	Switching system for battery jumper cables	8/4/1989	11/20/1990
US	5,083,076	Scott	Portable battery booster	11/13/1989	1/21/1992
US	5,111,130	Bates	Clamp activated jumper cable switch	3/14/1990	5/5/1992
US	5,189,359	Kronberg	Solid state safety jumper cables	1/22/1991	2/23/1993
US	5,319,298	Wanzong	Battery maintainer and charger apparatus	10/31/1991	6/7/1994
US	5,486,434	Aoyama	Battery terminal	5/25/1993	1/23/1996

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
US	5,635,817	Shiska	Vehicle battery charging system	4/24/1995	6/3/1997
US	5,635,818	Quintero	Safety jumper apparatus	2/20/1996	6/3/1997
US	5,793,185	Gordon	Jump starter	6/10/1997	8/11/1998
US	5,795,182	Jacob	Polarity independent battery jumper cables or charger with automatic polarity detector and built-in automatic safety features	7/25/1996	8/18/1998
US	5,820,407	Fletcher	Directional jumper cables	4/22/1996	10/13/1998
US	5,921,809	Fink	Safety battery and jumper cables therefor	5/29/1997	7/13/1999
US	5,953,681	Busch	Autonomous node for a test instrument system having a distributed logic nodal architecture	7/30/1996	9/14/1999
US	5,965,998	Dickey	Automatic polarity and condition sensing battery charger	7/2/1996	10/12/1999
US	6,054,779	Zubko	Electrical power connector for tandem trailers	4/14/1998	4/25/2000
US	6,130,519	Reid	Portable battery charger including auto-polarity switch	10/16/1998	10/10/2000
US	6,140,796	Martin	Battery jump-start safety system and process	8/7/1997	10/31/2000
US	6,212,054	Chan	Spark proof booster cable system	9/21/1999	4/3/2001
US	6,262,492	Sheng	Car battery jumper cable	4/9/1999	7/17/2001

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
US	6,262,559	Becker	Portable auxiliary charging battery pack for thin metal film battery power pack	7/6/2000	7/17/2001
US	6,362,599	Turner	Method and apparatus for sensing the status of a vehicle	9/21/2000	3/26/2002
US	6,386,907	Ruffa	Battery clamp	10/5/1999	5/14/2002
US	6,632,103	Liu	Adaptive booster cable for a vehicle battery	9/9/2002	10/14/2003
US	6,648,701	Mouissie	Battery clamp	12/14/2000	11/18/2003
US	7,148,580	Brandenburg	Method of and system for starting engine-driven power equipment	8/6/2003	12/12/2006
US	7,301,303	Hulden	Portable battery jump start in a soft-sided carrying case	8/16/2004	11/27/2007
US	7,514,900	Sander	Portable devices having multiple power interfaces	10/6/2006	4/7/2009
US	7,749,031	Detter	Lever lock battery clamp terminal	4/83/2008	7/6/2010
US	7,791,319	Guthrie	Circuit and method of operation for an electrical power supply	2/21/2003	9/7/2010
US	7,847,520	Guthrie	Circuit and method of operation for an electrical power supply	2/21/2003	12/7/2010
US	7,868,582	Sander	Portable devices having multiple power interfaces	10/6/2006	1/11/2011
US	8,030,900	Hussain	Circuits and methods for controlling power in a battery operated system	9/5/2006	10/4/2011

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
US	8,076,900	Brown	Portable battery charger	4/21/2006	12/13/2011
US	8,199,024	Baxter	Low-voltage connection with safety circuit and method for determining proper connection polarity	9/14/2009	6/12/2012
US	8,376,775	Rinehardt	Safety jumper cables	3/17/2010	2/19/2013
US	8,493,021	Fox	Method and apparatus for providing supplemental power to an engine	1/03/2008	9/03/2009
US	8,686,688	Cho	Portable charging apparatus for mobile communication terminal, charging method thereof, and charging system	6/29/2010	4/1/2014
US	8,704,483	Bertness	System for automatically gathering battery information	8/20/2004	4/22/2014
US	8,786,247	Ishino	Charging circuit	9/17/2010	7/22/2014
US	9,007,023	Dao	Portable power supply	3/14/2012	4/14/2015
US	9,041,244	Graf	On-board power supply protection	12/30/2010	5/26/2015
US	9,263,907	Fox	Method and apparatus for providing supplemental power to an engine	1/3/2008	2/16/2016
US	9,718,419	Proebstle	Motor vehicle having a jump-start device between at least two on-board electric power systems	2/3/2011	8/1/2017
US	10,328,806	Wang	Automobile charger	4/28/2014	6/25/2019

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
US	10,328,808	Kawano	Control method, program and computer apparatus for reducing power consumption and heat generation by a CPU during wait	12/26/2001	7/24/2003
DE	29507501	Seo	Portable electric light with a fluorescent lamp	5/5/1995	6/29/1995
CN	203504235	Wuqiang	Multifunctional emergency starting power supply for car	10/11/2013	3/26/2014
DE	202009016260	Tsai	Battery charger	11/30/2009	3/25/2010
DE	202013102599	Asia Bright	Emergency starting power supply for vehicles	6/18/2013	8/13/2013
US	2002/0076997	Smith	Portable jumper system and method	3/5/2001	9/5/2002
US	2002/0121877	Smith	Portable jumper system and method	3/5/2001	9/5/2002
US	2004/0066168	George	Jump start and reverse battery protection circuit	10/4/2002	4/8/2004
WO	2004/036714	Krieger	High frequency battery charger and method of operating same	10/15/2002	4/29/2004
US	2005/0040788	Tseng	Storage cell supplying power of different voltages	8/19/2003	2/24/2005
US	2005/0082833	Sodemann	Method of and system for starting engine-driven power equipment	8/6/2003	4/21/2005
US	2005/0110467	Thomason	Automotive jump starter with polarity detection and current routing circuitry	11/3/2003	5/26/2005

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
US	2005/0252573	Montani	Automotive fuel cell siphon/refill tool	5/13/2004	11/17/2005
US	2007/0278990	Raichle	Battery boosting apparatus and method	6/6/2006	12/6/2007
US	2007/0285049	Krieger	Jump starter with built-in battery charger	2/24/2006	12/13/2007
US	2009/0218988	Richardson	Method and apparatus for providing supplemental power to an engine	1/3/2008	9/3/2009
US	2009/0236859	McFadden	Vehicle integrated dead battery backup starting system	3/24/2008	9/24/2009
US	2009/0253312	Detter	Lever lock battery clamp terminal	4/3/2008	10/8/2009
US	2010/0283623	Baxter	Low-voltage connection with safety circuit and method for determining proper connection polarity	11/28/2008	11/11/2010
US	2010/0301800	Inskeep	Multi-purpose battery jump starter and reconditioner	5/26/2009	12/2/2010
US	2011/0068734	Waldron	Battery maintenance kit	9/18/2009	3/24/2011
US	2011/0140651	Dai	Rechargeable lead-acid battery cover	12/12/2009	6/16/2011
US	2012/0091944	Rogers	Jump start adapter	10/19/2010	4/19/2012
US	2012/0169116	Graf	On-board power supply protection	12/30/2010	7/5/2012
US	2012/0299533	Huffman	Circuit and method enabling the sharing of a battery charger with multiple batteries	5/23/2011	11/29/2012

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
US	2012/0319487	Shah	Integrated battery backup and charging for mobile devices	6/16/2011	12/20/2012
WO	2012/074548	Koebler	Lithium starter battery and solid state switch therefor	11/29/2010	6/7/2012
US	2013/0241488	Dao	Portable power supply	3/14/2012	9/19/2013
US	2013/0314041	Proebstle	Motor vehicle having a jump-start device	2/3/2011	11/28/2013
WO	2013/137873	Dao	Portable power supply	3/14/2012	9/19/2013
US	2014/0159509	Inskeep	Battery boost jump starter	9/11/2012	6/12/2014
US	D625,265	DuMelle	Battery clamp	1/29/2010	10/12/2010
US	D649,116	Nakatsuka	Booster cable	11/19/2008	11/22/2011
US	D689,020	Demirjian	Battery charger terminal clamp	10/21/2011	9/3/2013
US	9,634,491	Robinson	Power managers and methods for operating power managers	7/10/2009	4/25/2017
US	2002/0155752	Winkle	Battery jumper cable connection apparatus and methods	4/5/2001	10/24/2002
TW	M417714	Luo	Multifunctional portable power supply device	4/25/2011	12/1/2011
US	5,650,974	Yoshimura	Semiconductor memory device and power supply control IC for use with semiconductor memory device	1/30/1995	7/22/1997

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
US	4,041,445	Carter	Method of connecting flexible numbers of geophone flyer groups to data acquisition units	6/28/1976	8/9/1977
US	4,931,731	Jenks	Magnetic particle inspection apparatus with enhanced uniformity of magnetization	1/5/1988	6/5/1990
US	2010/0173182	Baxter	Low-voltage connection with safety circuit and method for determining proper connection polarity	11/28/2008	7/8/2010
US	6,347,957	Karuppana	System and Method for Providing Surge, Short, and Reverse Polarity Connection Protection	9/7/2000	8/20/2002
US	9,364,491	Robinson	Power Managers and Methods for Operating Power Managers	12/17/2013	4/17/2014
CN	1625015	Fan	Emergency power supply	12/30/2004	1/09/2008
WO	2008/011760	Fan	An intelligentized high-frequency charger for batteries	7/27/2006	1/31/2008
TW	M477722	Xu	Intelligent vehicle power rescue apparatus	1/17/2014	5/1/2014
USB Implementers Forum, Inc.			Battery Charging Specification, Revision 1.1	4/15/2009	4/15/2009
USB Implementers Forum, Inc.			Battery Charging Specification, Revision 1.2	12/7/2010	12/7/2010

Country of Origin	Number	First Named Inventor	Title	Effective Prior Art Date	Issue/ Publication Date
USB Implementers Forum, Inc.			Battery Charging 1.2 Compliance Plan	10/12/2011	10/12/2011
USB Implementers Forum, Inc.			Power Delivery Specification Presentation	7/16/2012	7/16/2012
USB Implementers Forum, Inc.			Power Delivery Specification	7/5/2012	7/5/2012
Shenzhen Carku Technology Co., LTD.			Carku Product Brochure for the Epower-20 jump starter product	4/15/2014	4/15/2014
Shenzhen Carku Technology Co., LTD.			Carku Product Brochure for the Epower-21 jump starter product	4/15/2014	4/15/2014
Shenzhen Carku Technology Co., LTD			2014 Canton Fair Brochure	4/15/2014	4/15/2014
Fairchild Semiconductor Corporation			MC78XX/LM78XX/MC78XXA 3-Terminal 1A Positive Voltage Regulator	2001	2001
XySemi Inc.			XR3403 1.2MHz, 26V Step-up DC/DC Converter	11/12/2012	11/12/2012
Texas Instruments			LM2621 Low Input Voltage, Step-Up DC-DC Converter	4/16/2013	4/16/2013

* The date shown is the date the U.S. or WIPO patent document is effective as prior art pursuant to 35 U.S.C. §102(d)(2). The document is also effective as prior art at least as of its actual filing date in the U.S. pursuant to 35 U.S.C. §102(d)(1).

** The date shown is the publication date of the WIPO patent document. The document is also effective as prior art at least as its actual filing date in the U.S. pursuant to 35 U.S.C. §102(d)(1).

B. Prior Art Products and Systems

Respondents identify the following products and systems (collectively "Product Prior Art") that were publicly known, in public use, offered for sale, sold, and/or invented prior to the

CONTAINS CONFIDENTIAL BUSINESS INFORMATION SUBJECT TO PROTECTIVE ORDER

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Clark S. Cheney
Administrative Law Judge

In the Matter of **CERTAIN PORTABLE BATTERY JUMP STARTERS AND COMPONENTS THEREOF**	**Investigation No. 337-TA-1256**

RESPONSE OF WALMART INC., TO THE COMPLAINT OF THE NOCO COMPANY UNDER SECTION 337 OF THE TARIFF ACT OF 1930 AND NOTICE OF INVESTIGATION

Pursuant to 19 C.F.R. § 210.13(a), Walmart Inc., hereby responds to the Amended Complaint filed by The NOCO Company ("Complainant" or "NOCO") on February 3, 2021, and any amendments permitted thereto, in the above-captioned investigation ("this Investigation") and to the Notice of Investigation issued by the United States International Trade Commission ("Commission") dated March 17, 2021. As used herein in the responses of Walmart Inc., the term "Walmart" refers collectively to: Walmart Inc. (formerly Wal-Mart Stores, Inc.); Wal-Mart.com USA, LLC; Sam's West, Inc.; and, Sam's East, Inc.

The following headings and numbered paragraphs correspond to and respond to the numbered paragraphs set forth in the Complaint as amended for ease of reference. However, to the extent that such headings themselves contain factual and legal characterizations, Walmart denies such characterizations. As an initial matter, Walmart denies that it has engaged in unfair competition or violated Section 337 of the Tariff Act of 1930, as amended, by importing, selling for importation, or selling within the United States after importation any devices, products, or articles that infringe any valid and enforceable patent asserted in this Investigation.

Because discovery by Walmart has just begun, Walmart has not yet had sufficient time and opportunity to collect and review all of the information that may be relevant to the issues raised in this Response. Walmart therefore reserves the right to amend or supplement its responses, including raising additional defenses, based on any additional facts or developments that become available or that arise after the filing of this Response. As such, Walmart denies each and every allegation in the Amended Complaint that is not expressly admitted below. Any factual allegation admitted below is admitted only as to the specific admitted facts, and not as to any purported conclusions, characterizations, implications, or speculations that might follow from the admitted facts.

I. INTRODUCTION

1. The NOCO Company ("NOCO" or "Complainant"), a 100 plus year old company designing and creating premium battery products in the United States for the automotive industry, respectfully requests that the U.S. International Trade Commission ("Commission") commence an investigation pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("Section 337") to remedy the unlawful importation into the United States, the sale for importation, offer for sale, and/or the sale within the United States after importation by the owner, importer, or consignee, of certain portable battery jump starters and components thereof that infringe one or more of the valid and enforceable United States patents owned by NOCO.

RESPONSE: Walmart states that the allegations contained in ¶ 1 of the Amended Complaint are conclusions of law as to which no response is necessary. To the extent any response is required, Walmart admits that Complainant has filed the Complaint against all of the proposed respondents, that Complainant has requested the Commission to institute an investigation addressing the sale for importation, importation, and/or sale within the United States after importation of certain portable battery jump starters and components thereof. Walmart denies that it has engaged in any unlawful act as alleged by the Complainant.

2. On information and belief, the Proposed Respondents, as listed in Section II.B., supra, are manufacturers, importers, trading companies, and retailers based in China and the United States. Respondents have engaged, and continue to engage, in unfair acts in violation of Section 337 through the unlicensed importation, sale for importation, offer for sale, and/or sale after importation into the United States of portable battery jump starters having certain safety features ("Accused Products"). Upon information and belief, the Accused Products have been imported into the United States.

RESPONSE: Walmart states that statements and allegations of ¶ 2 of the Amended Complaint contain opinions and legal arguments rather than factual assertions and, therefore, denies the same. Walmart states that the allegations contained in ¶ 2 of the Amended Complaint also include conclusions of law as to which no response is necessary. Walmart admits that it imported, sold, and/or offered for sale in the United States certain Accused Products but denies that it has engaged in any unlawful act as alleged by the Complainant.

3. The Accused Products infringe one or more of the Asserted Claims of United States Patent Nos. 9,007,015 and 10,604,024 (collectively, the "Asserted Patents"), which are both owned by NOCO. Pursuant to Commission Rule 210.12(a)(9)(i), copies of the '015 Patent and the '024 Patent, are attached to this Complaint as Exhibits 1 – 2, respectively.

RESPONSE: Walmart states that the allegations contained in ¶ 3 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same.

4. Certain of Respondents' Accused Products also infringe one or more of U.S. Trademark Reg. Nos. 4,811,656 and 4,811,749 (collectively, the "Asserted Trademarks"), which are both owned by NOCO, in violation of Section 337(a)(1)(C). Pursuant to Commission Rule 210.12(a)(9)(i), copies of the '656 Trademark and '749 Trademark are attached to this Complaint as Exhibits 3-4, respectively.

RESPONSE: Walmart assumes that the allegations in ¶ 4 of the Amended Complaint are directed to other Respondents and, therefore, denies all the allegations in ¶ 4 of the Amended Complaint as concerns Walmart. Walmart further states that the allegations contained in ¶ 4 of

the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same.

5. Complainant asserts that the Accused Products infringe at least the following claims of one or more Asserted Patents in violation of Section 337(a)(1)(B)(i), either literally or under the doctrine of equivalents:

Asserted Patent	**Asserted Claims[3]**
9,007,015	**1**, 4, 11, 14, 18, 19, 21
10,604,024	**1,** 4, 5, 6, 16, 19, 23, 24, 26, **29**, **30**

Table 1. The Asserted Claims

RESPONSE: Walmart states that the allegations contained in ¶ 5 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same.

6. Pursuant to Commission Rules 210.10(b)(1) and 210.12(a)(12), Complainant states that a plain English description of the category of Accused Products is portable, battery-powered devices that are used to jump-start batteries such as those in automobiles, trucks, and other vehicles, and related components, namely battery cables and clamps.

RESPONSE: Walmart states that the allegations contained in ¶ 6 of the Complaint contain opinions and legal arguments rather than factual assertions and, therefore, denies the same.

7. As required by Section 337(a)(2) and (3), a domestic industry exists and is well established in the United States for each of the Asserted Products and for products and technology protected by the Asserted Patents and Asserted Trademarks.

RESPONSE: Walmart states that the allegations contained in ¶ 7 of the Complaint contain opinions and legal arguments rather than factual assertions and, therefore, denies the same.

8. Complainant NOCO seeks a general exclusion order pursuant to Section 337(d)(2) excluding from entry into the United States all products that infringe one or more claims of any of the Asserted Patents and/or are sold or advertised using the Asserted Trademarks. Complainant further seeks cease and desist orders pursuant to Section 337(f) directing Respondents and those acting in conjunction with Respondents to cease the importation, offering for sale, promotion, marketing, advertising, demonstration, and warehousing of inventory for distribution, sale, and use of such products within the United States. Complainant also seeks a bond pursuant to Section 337(j).

RESPONSE: Walmart states ¶ 8 of the Complaint is not an allegation. Thus, no response is required. To the extent any response is required, Walmart admits that Complainant seeks, as relief, a general exclusion order, a cease and desist order and to impose a bond in this Investigation but denies that Complainant is entitled to such relief against Walmart. Walmart denies that the Complainant is entitled to any relief against Walmart as a result of this Investigation or that it needs relief in order to protect a domestic industry.

9. In the alternative, should the Commission find that a general exclusion order is not appropriate, NOCO respectfully requests that limited exclusion orders be entered against each named Respondent and its subsidiaries, predecessors, affiliates, agents, successors, and assigns.

RESPONSE: Walmart states ¶ 9 of the Complaint is not an allegation. Thus, no response is required. To the extent any response is required, Walmart admits that Complainant seeks, as relief, a limited exclusion order in this Investigation but denies that Complainant is entitled to such relief against Walmart. Walmart denies that the Complainant is entitled to any relief against Walmart as a result of this Investigation or that it needs relief in order to protect a domestic industry.

II. THE PARTIES

A. Complainant NOCO

10. Complainant NOCO is an Ohio corporation having its principal place of business at 30339 Diamond Parkway #102, Glenwillow, Ohio 44139.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 10 of the Complaint and, therefore, denies the same.

11. NOCO is a privately held family company that was founded in the United States over 100 years ago. Joseph H. Nook, a tire and battery distributor from Cleveland, Ohio, founded The NOCO Company in 1914. Mr. Nook set out to develop a product that would prevent battery corrosion. After several hundred different formulations, Mr. Nook began commercially manufacturing and distributing the world's first Battery Corrosion Preventative which he called "NCP2," which is an acronym for "No Corrosion Product" which is applied in "2 Steps." The NCP2 brand quickly became a household name in every major battery and automotive shop. For over 100 years, the NCP2 brand has been preventing battery corrosion on over a billion vehicles and applications worldwide.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 11 of the Complaint and, therefore, denies the same.

12. Today, NOCO, still owned and managed by the Nook family, remains a leading innovator in the automotive battery industry, and designs and manufactures premium consumer battery chargers, jump starters, solar panels, and portable power devices as well as a wide range related battery products and accessories.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 12 of the Complaint and, therefore, denies the same.

13. NOCO has all right, title, and interest in the Asserted Patents and Asserted Trademarks. See Exs. 6 and 7.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 13 of the Complaint and, therefore, denies the same.

14. NOCO takes significant measures to protect its intellectual property rights. NOCO first began noticing the appearance of the Accused Products in the U.S. marketplace in 2014 shortly after the introduction of its Boost® products and since then has continuously endeavored to stop the entities involved. NOCO's IPR protection efforts are outlined in Section XI, infra.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 14 of the Complaint and, therefore, denies the same.

B. Proposed Respondents

15. The sections below provide information sufficient to identify the Proposed Respondents. Additional information regarding the Proposed Respondents' unfair acts as they relate to the Accused Products can be found in Section VI below, and in the attached Confidential Declaration of Anne Hurst. See Ex. 44C. For the purposes of this Complaint, the Proposed Respondents are grouped by the entity that is believed to be the manufacturer of a particular design, and all entities related to the importation of that design.

RESPONSE: Walmart states that ¶ 15 of the Complaint is not an allegation. Thus, no response is required. To the extent any response is required, Respondent lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 15 and, therefore, denies the same. Walmart further states that the allegations contained in the second sentence of ¶ 15 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Walmart admits that there is a Section VI in this Complaint and the Complainant has attached a Confidential Declaration of Anne Hurst.

1. Carku Respondents

a) Advance Auto Parts, Inc.

16. On information and belief, Respondent Advance Auto Part, Inc. ("Advance Auto") is a company organized and existing under the laws of the United States, having its principal place of business located at 2635 East Millbrook Road, Raleigh, North Carolina 27604.

RESPONSE: The allegations in ¶ 16 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 16 of the Complaint and, therefore, denies the same.

17. On information and belief, Advance Auto is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 17 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 17 of the Complaint and, therefore, denies the same.

b) Antigravity Batteries LLC

18. On information and belief, Respondent Antigravity Batteries LLC ("Antigravity") is a company organized and existing under the laws of the United States, having its principal place of business located at 15622 Broadway Center Street, Gardena, California 90248.

RESPONSE: The allegations in ¶ 18 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 18 of the Complaint and, therefore, denies the same.

19. On information and belief, Antigravity is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 19 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 19 of the Complaint and, therefore, denies the same.

c) Aukey Technology Co., Ltd. [Respondent Removed]

20. On information and belief, Respondent Aukey Technology Ltd. ("Aukey") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 102, Building P09, Huanancity Elec-Trading Center, Longgang District, Shenzhen, China.

RESPONSE: The allegations in ¶ 20 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 20 of the Complaint and, therefore, denies the same.

21. On information and belief, Aukey **[Respondent Removed]** is in the business of manufacturing jump starters in China. Aukey sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 21 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 21 of the Complaint and, therefore, denies the same.

d) Autogen Technology Co., Ltd. [Respondent Removed]

22. On information and belief, Respondent Autogen Technology Co., Ltd. ("Autogen") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Bld 21B No 3021 Kaixuan Rd, Shanghai, China.

RESPONSE: The allegations in ¶ 22 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 22 of the Complaint and, therefore, denies the same.

23. On information and belief, Autogen**[Respondent Removed]** is in the business of manufacturing jump starters in China. Autogen sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 23 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 23 of the Complaint and, therefore, denies the same.

e) Gooloo Technologies LLC

24. On information and belief, Respondent Gooloo Technologies LLC ("Gooloo") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 303 Room Bantian Business Center Bantian Wuhe Road, Longgang Dist., Shenzhen China 51800. Gooloo is believed to be affiliated with Shenzhen Gooloo ECommerce Co., Ltd.

RESPONSE: The allegations in ¶ 24 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 24 of the Complaint and, therefore, denies the same.

25. On information and belief, Gooloo is in the business of manufacturing jump starters in China. Gooloo Tech sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 25 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 25 of the Complaint and, therefore, denies the same.

f) Guangzhou Unique Electronics Co., Ltd. [Respondent Removed]

26. On information and belief, Respondent Guangzhou Unique Electronics Co., Ltd. ("Guangzhou Unique Electronics") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at NO. 9, Jinfa Logistics Park, Baiyun Lake Street, Baiyun District, Guagnzhou, China 510000.

RESPONSE: The allegations in ¶ 26 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 26 of the Complaint and, therefore, denies the same.

27. On information and belief, Guangzhou Unique Electronics**[Respondent Removed]** is in the business of manufacturing jump starters in China. Guangzhou Unique Electronics sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 27 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 27 of the Complaint and, therefore, denies the same.

g) Horizon Tool, Inc.

28. On information and belief, Respondent Horizon Tool, Inc. ("Horizon Tool") is a company organized and existing under the laws of the United States, having its principal place of business located at 7918 Industrial Village Road, Greensboro, North Carolina 27409. Horizon Tool is believed to be affiliated with AllStart LLC and Cal-Van & Horizon Tool Inc.

RESPONSE: The allegations in ¶ 28 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 28 of the Complaint and, therefore, denies the same.

29. On information and belief, Horizon Tool is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 29 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 29 of the Complaint and, therefore, denies the same.

h) Huizhou Grepro E-Commerce [Respondent Removed]

30. On information and belief, Respondent Huizhou Grepro E-Commerce ("Huizhou Grepro") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 2004 B Kaibinsiji Build, Yunshanxi Road, Huicheng District, Huizhou, China.

RESPONSE: The allegations in ¶ 30 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 30 of the Complaint and, therefore, denies the same.

31. On information and belief, Huizhou Grepro **[Respondent Removed]** is in the business of manufacturing jump starters in China. Huizhou Grepro sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 31 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 31 of the Complaint and, therefore, denies the same.

i) Medcursor, Inc. [Respondent Removed]

32. On information and belief, Medcursor, Inc. ("Medcursor") is a company organized and existing under the laws of the United States, having its principal place of business located at 6130 W Flamingo Road, Suite 1818, Las Vegas, Nevada 89103.

RESPONSE: The allegations in ¶ 32 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 32 of the Complaint and, therefore, denies the same.

33. On information and belief, Medcursor **[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 33 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 33 of the Complaint and, therefore, denies the same.

j) Nekteck, Inc.

34. On information and belief, Nekteck, Inc. ("Nekteck") is a company organized and existing under the laws of the United States, having its principal place of business located at 421 S Brookhurst Street, Suite 127, Anaheim, California 92804.

RESPONSE: The allegations in ¶ 34 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 34 of the Complaint and, therefore, denies the same.

35. On information and belief, Nekteck is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 35 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 35 of the Complaint and, therefore, denies the same.

k) PowerMax Battery (U.S.A.), Inc.

36. On information and belief, PowerMax Battery (U.S.A.), Inc. ("PowerMax") is a company organized and existing under the laws of the United States, having its principal place of business located at 1520 S Grove Avenue, Ontario, California 91761.

RESPONSE: The allegations in ¶ 36 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 36 of the Complaint and, therefore, denies the same.

37. On information and belief, PowerMax is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 37 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 37 of the Complaint and, therefore, denies the same.

l) Prime Global Products, Inc.

38. On information and belief, Prime Global Products, Inc. ("Prime Global Products") is a company organized and existing under the laws of the United States, having its principal place of business located at 2220 Airport Industrial Drive, Suite 100, Ball Ground, Georgia 30107.

RESPONSE: The allegations in ¶ 38 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 38 of the Complaint and, therefore, denies the same.

39. On information and belief, Prime Global Products is in the business of manufacturing jump starters in China. Prime Global Products sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 39 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 39 of the Complaint and, therefore, denies the same.

m) Shenzhen Carku Technology Co., Ltd.

40. On information and belief, Respondent Shenzhen Carku Technology Co., Ltd. ("Carku") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Building A, Qixing Creative Workshop (Dalang), Lianrun Road, Gaofeng Community, Dalang Street, Longhua New District, China. Carku is believed to be affiliated with MigOwatt Group LLC.

RESPONSE: The allegations in ¶ 40 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 40 of the Complaint and, therefore, denies the same.

41. On information and belief, Carku is in the business of manufacturing jump starters in China. Carku sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 41 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 41 of the Complaint and, therefore, denies the same.

n) Shenzhen Moock Technology Co., Ltd. [Respondent Removed]

42. On information and belief, Respondent Shenzhen Moock Technology Co., Ltd. ("Shenzhen Moock") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 718, Zerun Center, Bantian Street, Longgang District, Shenzhen, Guangdong, China.

RESPONSE: The allegations in ¶ 42 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 42 of the Complaint and, therefore, denies the same.

43. On information and belief, Shenzhen Moock**[Respondent Removed]** is in the business of manufacturing jump starters in China. Shenzhen Moock sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 43 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 43 of the Complaint and, therefore, denies the same.

o) Shenzhen Take Tools Co., Ltd.

44. On information and belief, Respondent Shenzhen Take Tools Co., Ltd. ("Shenzhen Take Tools") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. B714, Niulanqian Building, Minzhi Road, Longhua District, Shenzhen, Guangdong, China 518000.

RESPONSE: The allegations in ¶ 44 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 44 of the Complaint and, therefore, denies the same.

45. On information and belief, Shenzhen Take Tools is in the business of manufacturing jump starters in China. Shenzhen Take Tools sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 45 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 45 of the Complaint and, therefore, denies the same.

p) Sictec Instruments Co., Ltd. [Respondent Removed]

46. On information and belief, Respondent Sictec Instruments Co., Ltd. ("Sictec Instruments") is a Hong Kong corporation that is organized and existing under the laws of Hong Kong and has a principal place of business located at Suites 908-090, Level 9, Landmark North, 39 Lung Sum Avenue, Sheung Shui, Hong Kong 999077.

RESPONSE: The allegations in ¶ 46 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 46 of the Complaint and, therefore, denies the same.

47. On information and belief, Sictec Instruments**[Respondent Removed]** is in the business of manufacturing jump starters in Hong Kong. Sictec Instruments sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 47 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 47 of the Complaint and, therefore, denies the same.

q) Walmart Inc.

48. On information and belief, Walmart Inc. ("Walmart") is a company organized and existing under the laws of the United States, having its principal place of business located at 702 S.W. 8th Street, Bentonville, Arkansas 72716. Walmart is believed to be affiliated with Wal-Mart Stores, Inc.; Sam's West, Inc (d/b/a Sam's Club); and Sam's East, Inc. (d/b/a Sam's Club).

RESPONSE: Walmart admits that Walmart Inc. is a company organized and existing under the laws of the United States, having its principal place of business located at 702 S.W. 8th Street, Bentonville, Arkansas 72716. Walmart Inc. admits that it is affiliated with Wal-Mart Stores, Inc.; Sam's West, Inc (d/b/a Sam's Club); and Sam's East, Inc. (d/b/a Sam's Club).

49. On information and belief, Walmart is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Walmart admits that it is in the business of importing and/or selling within the United States after importation, inter alia, jump starters. Walmart states that the remaining

allegations contained in ¶ 49 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent necessary, denies the same.

r) 70mai Co., Ltd.

50. On information and belief, 70mai Co., Ltd. ("70mai") is a company organized and existing under the laws of the United States, having its principal place of business located at Room 2220, Building 2, No. 588, Zixing Road, Minhang District, Shanghai, China.

RESPONSE: The allegations in ¶ 50 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 50 of the Complaint and, therefore, denies the same.

51. On information and belief, 70mai is in the business of manufacturing jump starters in China. 70mai sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 51 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 51 of the Complaint and, therefore, denies the same.

2. Boltpower Respondents

a) Anker Technology (UK) Ltd.

52. On information and belief, Respondent Anker Technology (UK) Ltd., ("Anker Technology UK") is a United Kingdom company organized and existing under the laws of the United Kingdom and has a principal place of business located at Suite B, Fairgate House, 205 Kings Road, Tyseley, Birmingham, United Kingdom B11 2AA. Anker is believed to be affiliated with Anker Technology Co., Ltd. and Anker Innovations Ltd.

RESPONSE: The allegations in ¶ 52 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 52 of the Complaint and, therefore, denies the same.

53. On information and belief, Anker Innovations, Anker Technology, and Anker Technology (UK) are in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 53 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 53 of the Complaint and, therefore, denies the same.

b) Arteck Electronic Co., Ltd.

54. On information and belief, Respondent Arteck Electronic Co., Ltd. ("Arteck Electronic") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. 1104-51, Tower B, Jinfengcheng Building, Shennan East Road No. 501, Shenzhen, Guangdong, China 518100.

RESPONSE: The allegations in ¶ 54 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 54 of the Complaint and, therefore, denies the same.

55. On information and belief, Arteck Electronic is in the business of manufacturing jump starters in China. Arteck Electronic sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 55 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 55 of the Complaint and, therefore, denies the same.

c) Best Parts, Inc.

56. On information and belief, Respondent Best Parts, Inc. ("Best Parts") is a company organized and existing under the laws of the United States, having its principal place of business located at 123 S Front Street, Memphis, Tennessee 38103-3607.

RESPONSE: The allegations in ¶ 56 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 56 of the Complaint and, therefore, denies the same.

57. On information and belief, Best Parts is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 57 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 57 of the Complaint and, therefore, denies the same.

d) Circus Link, Inc. [Respondent Removed]

58. On information and belief, Respondent Circus Link, Inc. ("Circus Link") is a company organized and existing under the laws of the United States, having its principal place of business located at 2132 S. Grove Ave, Unit N, Ontario, California 91761.

RESPONSE: The allegations in ¶ 58 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 58 of the Complaint and, therefore, denies the same.

59. On information and belief, Circus Link**[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 59 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 59 of the Complaint and, therefore, denies the same.

e) Deltran USA, LLC

60. On information and belief, Respondent Deltran USA, LLC ("Deltran") is a company organized and existing under the laws of the United States, having its principal place of business located at 801 International Speedway Blvd., DeLand, Florida 32724.

RESPONSE: The allegations in ¶ 60 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 60 of the Complaint and, therefore, denies the same.

61. On information and belief, Deltran is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 61 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 61 of the Complaint and, therefore, denies the same.

f) FlyLink Tech Technologies Co., Ltd.

62. On information and belief, Respondent FlyLink Tech Technologies Co., Ltd. ("FlyLink Tech") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 2 Floor, 9 Building, Hengling Ind. Park Min Zhi Street, Bao'an District, Shenzhen China.

RESPONSE: The allegations in ¶ 62 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 62 of the Complaint and, therefore, denies the same.

63. On information and belief, FlyLink Tech is in the business of manufacturing jump starters in China. FlyLink Tech sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 63 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 63 of the Complaint and, therefore, denies the same.

g) **Fconegy Co., Ltd. [Respondent Removed]**

64. On information and belief, Respondent Fconegy Co., Ltd. ("Fconegy") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 20th Floor, Hefeng Building, Meilong Rd., Longhua New District, Shenzhen Guangdong, China.

RESPONSE: The allegations in ¶ 64 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 64 of the Complaint and, therefore, denies the same.

65. On information and belief, Fconegy **[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 65 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 65 of the Complaint and, therefore, denies the same.

h) Guangdong Boltpower Energy Co., Ltd.

66. On information and belief, Respondent Guangdong Boltpower Energy Co., Ltd. ("Boltpower") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 3-6 Floor KelunTe Building No. 5 Ganli Road, Longgang District, Shenzhen City, Guangdong, China. Boltpower is believed to be affiliated with Dongguan Boltpower Co., Ltd. and Hunan Boltpower New Energy Co., Ltd.

RESPONSE: The allegations in ¶ 66 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 66 of the Complaint and, therefore, denies the same.

67. On information and belief, Boltpower is in the business of manufacturing jump starters in China. Boltpower sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 67 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 67 of the Complaint and, therefore, denies the same.

i) Guangzhou Autolion Electric Technology Co., Ltd.

68. On information and belief, Respondent Guangzhou Autolion Electronic Technology Co., Ltd. ("Autolion") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 902, No. 69, Xianlie Middle Road, Yuexiu District, Guagnzhou, Guangdong, China.

RESPONSE: The allegations in ¶ 68 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 68 of the Complaint and, therefore, denies the same.

69. On information and belief, Autolion is in the business of manufacturing jump starters in China. Autolion sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 69 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 69 of the Complaint and, therefore, denies the same.

j) Integrated Supply Network, LLC [Respondent Removed]

70. On information and belief, Integrated Supply Network, LLC ("Integrated Supply Network") is a company organized and existing under the laws of the United States, having its principal place of business located at 2727 Interstate Drive, Lakeland, Florida 33805.

RESPONSE: The allegations in ¶ 70 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 70 of the Complaint and, therefore, denies the same.

71. On information and belief, Integrated Supply Network**[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 71 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 71 of the Complaint and, therefore, denies the same.

k) K-Tool International

72. On information and belief, K-Tool International ("K-Tool") is a company organized and existing under the laws of the United States, having its principal place of business located at 45255 Five Mile Road Plymouth, Michigan 48170.

RESPONSE: The allegations in ¶ 72 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 72 of the Complaint and, therefore, denies the same.

73. On information and belief, K-Tool is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 73 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 73 of the Complaint and, therefore, denies the same.

l) Lowe's Companies, Inc.

74. On information and belief, Lowe's Companies, Inc. ("Lowe's") is a company organized and existing under the laws of the United States, having its principal place of business located at 1000 Lowe's Blvd. Mooresville, North Carolina.

RESPONSE: The allegations in ¶ 74 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 74 of the Complaint and, therefore, denies the same.

75. On information and belief, Lowe's is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 75 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 75 of the Complaint and, therefore, denies the same.

m) Matco Tools Corporation

76. On information and belief, Matco Tools Corporation ("Matco") is a company organized and existing under the laws of the United States, having its principal place of business located at 4403 Allen Road Stow, Ohio 44224.

RESPONSE: The allegations in ¶ 76 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 76 of the Complaint and, therefore, denies the same.

77. On information and belief, Matco is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 77 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 77 of the Complaint and, therefore, denies the same.

n) MonoPrice, Inc.

78. On information and belief, Mono Price, Inc. ("MonoPrice") is a company organized and existing under the laws of the United States, having its principal place of business located at 1 Pointe Drive, 4th Floor Brea, California 92821.

RESPONSE: The allegations in ¶ 78 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 78 of the Complaint and, therefore, denies the same.

79. On information and belief, MonoPrice is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 79 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 79 of the Complaint and, therefore, denies the same.

o) National Automotive Parts Association, LLC

80. On information and belief, National Automotive Parts Association, LLC ("NAPA") is a company organized and existing under the laws of the United States, having its principal place of business located at 2085 Marietta Blvd Northwest Atlanta, GA 30318. NAPA is believed to be affiliated with Genuine Parts Company, a company organized and existing under the Laws of the United States, having its principal place of business located at 2999 Wildwood Parkway, Atlanta, Georgia 30339.

RESPONSE: The allegations in ¶ 80 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 80 of the Complaint and, therefore, denies the same.

81. On information and belief, NAPA is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 81 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 81 of the Complaint and, therefore, denies the same.

p) O'Reilly Automotive, Inc.

82. On information and belief, O'Reilly Automotive, Inc. ("O'Reilly") is a company organized and existing under the laws of the United States, having its principal place of business located at 233 South Patterson Avenue Springfield, Missouri 65802.

RESPONSE: The allegations in ¶ 82 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 82 of the Complaint and, therefore, denies the same.

83. On information and belief, O'Reilly is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 83 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 83 of the Complaint and, therefore, denies the same.

q) Pep Boys [Respondent Removed]

84. On information and belief, Pep Boys ("Pep Boys") is a company organized and existing under the laws of the United States, having its principal place of business located at 3111 West Allegheny Avenue Philadelphia, Pennsylvania 19132.

RESPONSE: The allegations in ¶ 84 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 84 of the Complaint and, therefore, denies the same.

85. On information and belief, Pep Boys**[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 85 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 85 of the Complaint and, therefore, denies the same.

r) Schumacher Power Technology Ltd.

86. On information and belief, Respondent Schumacher Power Technology Ltd. ("Schumacher") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. 30, Century Road, Binhai County, Yancheng, Jiangsu, China, 215127. Schumacher is believed to be affiliated with Schumacher Electric Corp.

RESPONSE: The allegations in ¶ 86 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 86 of the Complaint and, therefore, denies the same.

87. On information and belief, Schumacher is in the business of manufacturing jump starters in China. Schumacher sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 87 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 87 of the Complaint and, therefore, denies the same.

Schumacher Electric Corp.

87a) On information and belief, Respondent Schumacher Electric Corp. ("Schumacher") is a company organized and existing under the laws of the United States, having its principal place of business located at 801 E Business Center Drive Mount Prospect, Illinois 60056.

RESPONSE: The allegations in ¶ 87a concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 87a of the Complaint and, therefore, denies the same.

87b) On information and belief, Schumacher is in the business of manufacturing jump starters in China. Schumacher sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 87b concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 87b of the Complaint and, therefore, denies the same.

s) Shenzhen Chic Electrics Co., Ltd. [Respondent Removed]

88. On information and belief, Respondent Shenzhen Chic Electrics., Ltd. ("Shenzhen Chic Electrics") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 2 #5 Floor, Hualangjia Industrial Zone, Kukeng Community, Guanlan Street, Longhua New District, Shenzhen China.

RESPONSE: The allegations in ¶ 88 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 88 of the Complaint and, therefore, denies the same.

89. On information and belief, Shenzhen Chic Electrics**[Respondent Removed]** is in the business of manufacturing jump starters in China. Shenzhen Chic Electrics sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 89 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 89 of the Complaint and, therefore, denies the same.

t) Shenzhen Dingjiang Technology Co., Ltd. LLLC

90. On information and belief, Respondent Shenzhen Dingjiang Technology Co., Ltd. LLLC ("Shenzhen Dingjiang Technology") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 701G, HuafengBao'anZhigu Innovation Park Yintian 4th Road, Xixiang St., Bao'an District, Shenzhen, China 518000.

RESPONSE: The allegations in ¶ 90 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 90 of the Complaint and, therefore, denies the same.

91. On information and belief, Shenzhen Dingjiang Technology is in the business of manufacturing jump starters in China. Shenzhen Dingjiang Technology sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 91 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 91 of the Complaint and, therefore, denies the same.

u) Shenzhen Lianfatong Technology Co., Ltd. [Respondent Removed]

92. On information and belief, Respondent Shenzhen Lianfatong Technology Co., Ltd. ("Shenzhen Lianfatong") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 3A-E, Ganyutong Building, Qingji Road, Qinghu Community, Longhua Street, Longhua New District, Shenzhen, Guangdong, China 518000.

RESPONSE: The allegations in ¶ 92 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 92 of the Complaint and, therefore, denies the same.

93. On information and belief, Shenzhen Lianfatong**[Respondent Removed]** is in the business of manufacturing jump starters in China. Shenzhen Lianfatong sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 93 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 93 of the Complaint and, therefore, denies the same.

v) Shenzhen Li Feng Maoyiyouxiangongsi [Respondent Removed]

94. On information and belief, Respondent Shenzhen Li Feng Maoyiyouxiangongsi ("Shenzhen Li Feng Maoyiyouxiangongsi") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at China Da Wan Xin Cun Dong, 38 Dong 201 Long Gang Qu Yuan Shan Jie Dao, DaKang, Shenzhen Guangdong, China 518000.

RESPONSE: The allegations in ¶ 94 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 94 of the Complaint and, therefore, denies the same.

95. On information and belief, Shenzhen Li Feng Maoyiyouxiangongsi**[Respondent Removed]** is in the business of manufacturing jump starters in China. Shenzhen Li Feng Maoyiyouxiangongsi sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 95 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 95 of the Complaint and, therefore, denies the same.

w) Shenzhen Mediatek Tong Technology Co., Ltd.

96. On information and belief, Respondent Shenzhen Mediatek Tong Technology Co., Ltd. ("Shenzhen Mediatek") is a Chinese corporation that is organized and existing under the laws of

China and has a principal place of business located at Room 3A-E, Qianyu Tong Building, Qingji Road, Longhua Street, Longhua New District, Shenzhen, China.

RESPONSE: The allegations in ¶ 96 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 96 of the Complaint and, therefore, denies the same.

97. On information and belief, Shenzhen Mediatek is in the business of manufacturing jump starters in China. Shenzhen Mediatek sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 97 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 97 of the Complaint and, therefore, denies the same.

x) Shenzhen Topdon Technology Co., Ltd.

98. On information and belief, Respondent Shenzhen Topdon Technology Co., Ltd. ("Shenzhen Topdon") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 5th Floor, Building 12, Taihua Wutong Island, Intersection of Shunchang Road and Hangkong Road, Xixiang Subdistrict, Baoan District, Guangdong, Shenzhen, China 518112.

RESPONSE: The allegations in ¶ 98 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 98 of the Complaint and, therefore, denies the same.

99. On information and belief, Shenzhen Topdon is in the business of manufacturing jump starters in China. Shenzhen Topdon sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 99 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 99 of the Complaint and, therefore, denies the same.

y) Shenzhen Valuelink E-Commerce Co., Ltd.

100. On information and belief, Respondent Shenzhen Valuelink E-Commerce Co., Ltd. ("Shenzhen Valuelink") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 2nd Two-way ChangJiangPu, Heao Community, HengGang Street Office, Longgang District, Shenzhen, China 518000.

RESPONSE: The allegations in ¶ 100 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 100 of the Complaint and, therefore, denies the same.

101. On information and belief, Shenzhen Valuelink is in the business of manufacturing jump starters in China. Shenzhen Valuelink sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 101 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 101 of the Complaint and, therefore, denies the same.

z) Smart Well Enterprise Limited [Respondent Removed]

102. On information and belief, Smart Well Enterprise Limited ("Smart Well") is a Hong Kong company organized and existing under the laws of Hong Kong, having its principal place of business located at 14/F., Chun Wo Commercial Centre, 25 Wing Wo Street, Central, Hong Kong.

RESPONSE: The allegations in ¶ 102 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 102 of the Complaint and, therefore, denies the same.

103. On information and belief, Smart Well**[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 103 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 103 of the Complaint and, therefore, denies the same.

aa) Tii Trading Inc.

104. On information and belief, Tii Trading Inc. ("Tii Trading") is a company organized and existing under the laws of the United States, having its principal place of business located at 13200 Brooks Drive, Suite F, Baldwin Park, California 91706.

RESPONSE: The allegations in ¶ 104 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 104 of the Complaint and, therefore, denies the same.

105. On information and belief, Tii Trading is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 105 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 105 of the Complaint and, therefore, denies the same.

bb) Zhejiang Qingyou Electronic Commerce Co., Ltd.

106. On information and belief, Zhejiang Qingyou Electronic Commerce Co., Ltd. ("Zhejiang Qingyou Electronic") is a company organized and existing under the laws of the United States, having its principal place of business located at Room 266-270, Building 7, No. 253, Tinglan Street, Qiaosi Street, Yuhang District, Hangzhou, Zhejiang, China.

RESPONSE: The allegations in ¶ 106 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 106 of the Complaint and, therefore, denies the same.

107. On information and belief, Zhejiang Qingyou Electronic is in the business of manufacturing jump starters in China. Zhejiang Qingyou Electronic sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 107 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 107 of the Complaint and, therefore, denies the same.

3. Smartech Respondents

a) Smartech Products, Inc.

108. On information and belief, Smartech Products, Inc. ("Smartech") is a company organized and existing under the laws of the United States, having its principal place of business located at 8700 Larkin Road, Suite B, Savage, Maryland 20763.

RESPONSE: The allegations in ¶ 108 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 108 of the Complaint and, therefore, denies the same.

109. On information and belief, Smartech is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 109 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 109 of the Complaint and, therefore, denies the same.

4. Weego Respondents

a) Shenzhen Jieruijia Technology Co., Ltd.

110. On information and belief, Respondent Shenzhen Jieruijia Technology Co., Ltd. ("Shenzhen Jieruijia") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. 8 Mu Dun Road, No. 1 Industrial Zone, Lou Cun Community, Gong Ming, Guagn Ming District, Shenzhen City, China.

RESPONSE: The allegations in ¶ 110 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 110 of the Complaint and, therefore, denies the same.

111. On information and belief, Shenzhen Jieruijia is in the business of manufacturing jump starters in China. Shenzhen Jieruijia sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 111 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 111 of the Complaint and, therefore, denies the same.

b) Paris Corporation

112. On information and belief, Paris Corporation ("Paris Corporation") is a company organized and existing under the laws of the United States, having its principal place of business located at 800 Highland Drive Westhampton, New Jersey 08060.

RESPONSE: The allegations in ¶ 112 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 112 of the Complaint and, therefore, denies the same.

113. On information and belief, Paris Corporation is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 113 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 113 of the Complaint and, therefore, denies the same.

5. WinPlus Respondents

a) Shenzhen Winplus Technology Co., Ltd. [Respondent Removed]

114. On information and belief, Respondent Shenzhen Winplus Technology Co., Ltd. ("Shenzhen Winplus") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 307, Building 5, LixiangJiayaun, Jindaotian Road, Buji, Longgang District, Shenzhen, China 518000. Shenzhen Winplus is believed to be affiliated with Winplus Technology (Hk) Ltd., a Hong Kong company organized and existing under the laws of Hong Kong with a principal place of business located at Flat/Room 1103 11F, Hang Seng Mongkok Building, 677 Nathan Road, Mongkok, Hong Kong.

RESPONSE: The allegations in ¶ 114 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 114 of the Complaint and, therefore, denies the same.

115. On information and belief, Shenzhen Winplus**[Respondent Removed]** is in the business of manufacturing jump starters in China. Shenzhen Winplus Battery sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 115 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 115 of the Complaint and, therefore, denies the same.

b) Winplus North America, Inc.

116. On information and belief, Winplus North America, Inc. ("Winplus North America") is a company organized and existing under the laws of the United States, having its principal place of business located at 2975 Red Hill Ave, Suite 100, Costa Mesa, California 92626.

RESPONSE: The allegations in ¶ 116 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 116 of the Complaint and, therefore, denies the same.

117. On information and belief, Winplus is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 117 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 117 of the Complaint and, therefore, denies the same.

6. Great Neck Respondents

a) AutoZone, Inc.

118. On information and belief, Respondent AutoZone, Inc. ("AutoZone") is a company organized and existing under the laws of the United States, having its principal place of business located at 123 South Front Street, Memphis, Tennessee 38103.

RESPONSE: The allegations in ¶ 118 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 118 of the Complaint and, therefore, denies the same.

119. On information and belief, AutoZone is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 119 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 119 of the Complaint and, therefore, denies the same.

b) Great Neck Global, Inc. & Great Neck Saw Manufacturers, Inc.

120. On information and belief, Respondent Great Neck Global, Inc. ("Great Neck Global") is a Taiwanese corporation that is organized and existing under the laws of Taiwan and has a principal place of business located at No. 19, Lane 96, Section 2, Zhongshan North Road, Taipei, Taiwan 104.

RESPONSE: The allegations in ¶ 120 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 120 of the Complaint and, therefore, denies the same.

121. Great Neck is believed to be associated and/or operate under the name Great Neck Saw Manufacturers, Inc., ("Great Neck U.S.") a company organized and existing under the laws of the United States, having its principal place of business located at 165 East 2nd Street, Mineola, New York 11501.

RESPONSE: The allegations in ¶ 121 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 121 of the Complaint and, therefore, denies the same.

122. On information and belief, Great Neck Global is in the business of manufacturing jump starters in Taiwan. On information and belief, Great Neck U.S. sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 122 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 122 of the Complaint and, therefore, denies the same.

7. ThiEye Respondents

a) Dongguan Hangchebao Energy Technology Co., Ltd.

123. On information and belief, Respondent Dongguan Hangchebao Energy Technology Co., Ltd. ("Hangchebao") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 201, Changde Road No. 37, Humen Town Dongguan City, Guangdong, China.

RESPONSE: The allegations in ¶ 123 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 123 of the Complaint and, therefore, denies the same.

124. On information and belief, Hangchebao is in the business of manufacturing jump starters in China. Hanchebao sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: The allegations in ¶ 124 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 124 of the Complaint and, therefore, denies the same.

b) ThiEye Technologies Co., Ltd.

125. On information and belief, Respondent ThiEye Technologies Co., Ltd. ("ThiEye Technologies") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 405, 4th Floor, Building B, Bantian International Center, Longgang District, China.

RESPONSE: The allegations in ¶ 125 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 125 of the Complaint and, therefore, denies the same.

126. On information and belief, ThiEye Technologies is in the business of manufacturing jump starters in China. ThiEye Technologies sells, offers for sale, imports, and/or has imported

into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 126 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 126 of the Complaint and, therefore, denies the same.

8. Energen/ Performance Tool Respondents

a) Best Buy Co., Inc.

127. On information and belief, Respondent Best Buy Co., Inc. ("Best Buy") is a company organized and existing under the laws of the United States, having its principal place of business located at 7601 Penn Avenue, South Richfield, Minnesota 552423.

RESPONSE: The allegations in ¶ 127 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 127 of the Complaint and, therefore, denies the same.

128. On information and belief, Best Buy is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 128 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 128 of the Complaint and, therefore, denies the same.

b) Chao Fung Trading Co. Ltd. [Respondent Removed]

129. On information and belief, Respondent Chao Fung Trading Co. Ltd. ("Chao Fung Trading") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 911 Jinmao Toer Mingzhou Road W Beilun District Ningbo, China (Taiwan).

RESPONSE: The allegations in ¶ 129 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 129 of the Complaint and, therefore, denies the same.

130. On information and belief, Chao Fung Trading**[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 130 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 130 of the Complaint and, therefore, denies the same.

c) Energen, Inc.

131. On information and belief, Respondent Energen, Inc. ("Energen") is a company organized and existing under the laws of the United States, having its principal place of business located at 17008 Evergreen Place Unit B, City of Industry, California 91745.

RESPONSE: The allegations in ¶ 131 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 131 of the Complaint and, therefore, denies the same.

132. On information and belief, Energen is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 132 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 132 of the Complaint and, therefore, denies the same.

d) Wilmar Corporation [Respondent Removed]

133. On information and belief, Wilmar Corporation ("Wilmar") is a company organized and existing under the laws of the United States, having its principal place of business located at P.O. Box 88259 Tukwila, Washington 98138.

RESPONSE: The allegations in ¶ 133 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 133 of the Complaint and, therefore, denies the same.

134. On information and belief, Wilmar**[Respondent Removed]** is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 134 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134 of the Complaint and, therefore, denies the same.

9. Halo Respondents

a) Halo2Cloud, LLC

134a) On information and belief, Respondent Halo2Cloud, LLC ("Halo2Cloud") is a company organized and existing under the laws of the United States, having its principal place of business located at 6 Central Row, Hartford, Connecticut 06103.

RESPONSE: The allegations in ¶ 134a) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134a) of the Complaint and, therefore, denies the same.

134b) On information and belief, Halo2Cloud is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 134b) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134b) of the Complaint and, therefore, denies the same.

b) QVC, Inc.

134c) On information and belief, QVC, Inc. ("QVC") is a company organized and existing under the laws of the United States, having its principal place of business located at 250 Dove Court Santa Paula, California 93060.

RESPONSE: The allegations in ¶ 134c) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134c) of the Complaint and, therefore, denies the same.

134d) On information and belief, QVC is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 134d) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134d) of the Complaint and, therefore, denies the same.

c) Zagg Co. Rrd Gst4

134e) On information and belief, Zagg Co. Rrd Gst ("Zagg") is a company organized and existing under the laws of the United States, having its principal place of business located at 381 Airtech Parkway, Plainfield, Indiana 46168. Zagg is believed to be affiliated with Zagg, Inc., company organized an existing under the laws of the United States, having its principal place of business located at 910 West Legacy Center Way, Suite 500, Midvale, Utah 84047.

RESPONSE: The allegations in ¶ 134e) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134e) of the Complaint and, therefore, denies the same.

134f) On information and belief, Zagg is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 134f) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134f) of the Complaint and, therefore, denies the same.

10. Jump-n-Carry Respondents

134g) On information and belief, Respondent Clore Automotive, LLC ("Clore Automotive") is a company organized and existing under the laws of the United States, having its principal place of business located at 8735 Rosehill Suite 220, Lenexa, Kansas 66215.

RESPONSE: The allegations in ¶ 134g) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134g) of the Complaint and, therefore, denies the same.

134h) On information and belief, Clore Automotive is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: The allegations in ¶ 134h) concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 134h) of the Complaint and, therefore, denies the same.

III. THE PRODUCTS AT ISSUE

135. The products at issue are portable battery jump starter packs that allow users to safely jump start cars, boats, motorcycles, and more without connecting to another vehicle. The Accused Products and components thereof in this matter include safety features claimed by

Complainant's Asserted Patents that prevent injury to the user and damage to the battery being jump started.

RESPONSE: Walmart states that ¶ 135 of the Amended Complaint is not an allegation. Thus, no response is required. To the extent any response is required, Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 135 and, therefore, denies the same.

136. Since the early days of automobiles, the prevalent method to recharge a dead car battery has been through the use of "jumper cables," where two cables are run from a live battery in a running vehicle to a dead battery of a second vehicle. The many problems associated with jumper cables are well known, including the fact that a second car with a live battery is needed to perform a jump start, and the danger of sparking and short circuits, especially when the cables from the live battery to the dead battery are misconnected (referred to as "reverse polarity") or not fully connected.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 136 of the Amended Complaint and, therefore, denies the same.

137. Numerous efforts to improve the jump-starting process have been undertaken over the years, most of which have had significant deficiencies such as lack of portability or failure to solve safety problems and did not achieve significant popularity.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 137 of the Amended Complaint and, therefore, denies the same.

138. The advent of lithium-ion batteries has permitted the introduction of compact jump starters that do not require the use of a second vehicle, providing consumer convenience as well as certain safety advantages over prior jump-starting devices.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 138 of the Amended Complaint and, therefore, denies the same.

A. Complainant's Jump Starters

139. NOCO has successfully developed innovative automobile battery products in the United States for over 100 years. In 2014, NOCO introduced the Boost® lithium jump starter, which incorporates the patented safety features described herein. A photograph of one model of NOCO's Boost® jumping a dead battery is shown below, and a video demonstrating how the Boost® operates can be found at https://www.youtube.com/watch?v=QULcgAZUs0Y



Fig. 1- NOCO Boost® ProTM (GB150)- 3,000A Jump Starter

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 139 of the Amended Complaint and, therefore, denies the same.

140. NOCO currently offers a range of products for the charging, jump-starting, and storage of vehicle batteries. The products at issue here include the entire line of NOCO Boost® jump starters, namely, the Boost® SportTM, Boost® PlusTM, Boost® XLTM, Boost® HDTM, Boost® ProTM, and Boost® MaxTM. See Ex. 8.

RESPONSE: Walmart admits Exhibit 8 includes jump starter products, but it lacks sufficient knowledge or information to form a belief as to the content of the chart and the allegations in ¶ 140 of the Complaint and, therefore, denies the same.

141. The NOCO Boost® jump starters are ultra-portable, lightweight, and compact. They outperform traditional lead-acid battery booster packs at a fraction of the size and weight. The Boost® jump starters provide users a safe and easy-to-use car battery jump starter pack without the worry of incorrect connections or sparks. Boost® jump starters safely connect to any 12-volt vehicle battery due to NOCO's mistake-proof design featuring spark-proof technology and reverse polarity protection. All Boost® jump starters also feature a 2.1A USB output port to power any USB device, and an LED flashlight with 7 light modes, including SOS and Emergency Strobe. See Ex. 8. NOCO offers six Boost® models, which provide a range from 500A to 20,000A for a wide variety of vehicle batteries and applications.

RESPONSE: Walmart admits Exhibit 8 includes jump starter products, but it lacks sufficient knowledge or information to form a belief as to the content of the chart and the allegations in ¶ 141 of the Complaint and, therefore, denies the same.

142. Since its introduction, the Boost® has become known for its safety, ease of use, and reliability, among other features. As a result, the Boost® has enjoyed tremendous popularity, becoming one of the, if not the, market-leading compact lithium jump starters in the United States.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 142 of the Amended Complaint and, therefore, denies the same.

B. Respondents' Jump Starters

143. On information and belief, the Accused Products include portable battery jump starters that are manufactured in China and then imported into the United States. These products incorporate the patented technology claimed in the Asserted Patents. Examples of infringing jump starter models offered by three of the Respondents are shown below:

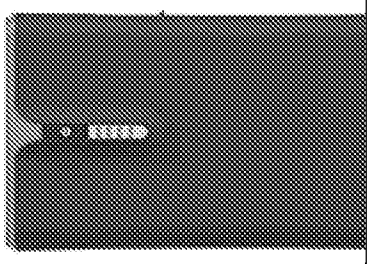
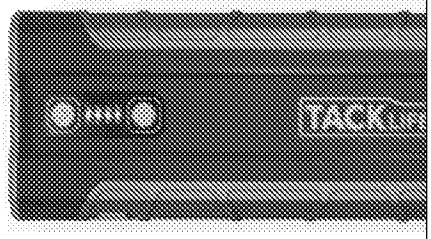
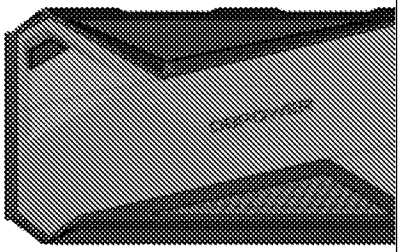
Gooloo GP1500	Tacklife T8 Max	DB Power DJS50
		

Fig. 2- Examples of Accused Products

RESPONSE: On information and belief, Walmart admits that certain Accused Products are imported into the United States. Walmart lacks sufficient knowledge or information to form a belief as to the remaning allegations in ¶ 143 of the Amended Complaint and, therefore, denies the same.

144. It is often difficult to determine the source of the Accused Products, as the Chinese manufacturers of these products frequently distribute them through several entities, even when the products are made in the same facility. There have also been instances of the Chinese manufacturers changing their names or using trading companies to ship the products to the United States. For these reasons, there are many instances in which neither the shipping documents nor the product packaging indicate the manufacturer of the product.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 144 of the Amended Complaint and, therefore, denies the same.

145. Respondents target customers in the United States through their own websites and also sell the accused jump starters via online marketplaces, including Amazon. Numerous Respondents' Accused Products are also sold in brick-and-mortar retail locations in the United States and/or on the websites of these retailers.

RESPONSE: Walmart admits that it sold portable battery jump starters through Walmart's online marketplace at Walmart.com, and in brick-and-mortar retail locations. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 145 of the Amended Complaint and, therefore, denies the same.

IV. THE ASSERTED PATENTS

146. The Asserted Patents generally relate to portable battery jump starters and safety features contained therein. These jump starters can be used to jump start the batteries of many vehicles including cars, trucks, boats, and motorcycles.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 146 of the Amended Complaint and, therefore, denies the same.

147. The identification, ownership, non-technical description, foreign counterparts, and licensees for each Asserted Patent are identified below.

RESPONSE: Walmart states that ¶ 147 of the Amended Complaint is not an allegation. Thus, no response is required. To the extent any response is required, Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 147 and, therefore, denies the same.

A. U.S. Patent No. 9,007,015

1. Identification of the Patent and Ownership

148. The '015 Patent, titled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection" issued on April 15, 2015, naming Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Ex. 1 (Certified copy of '015 Patent) at 1. The '015 Patent is based on U.S. Patent Application No. 14/325,938 filed on July 8, 2014. Id. The '015 Patent is a continuation of Application No. PCT/US2014/045343, filed on July 3, 2014. The '015 Patent will expire on July 3, 2034.

RESPONSE: Walmart admits that the '015 Patent is on its face entitled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection" and states on its face that it was issued on April 15, 2015, naming Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Walmart further admits that the '015 Patent on its face is based on U.S. Patent Application No. 14/325,938 filed on July 8, 2014 and it is a continuation of Application No. PCT/US2014/045343, filed on July 3, 2014. Walmart admits that the Amended Complaint is accompanied by Ex. 1, which purports to be a certified copy of the '015 Patent. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the remainder of ¶ 148 of the Amended Complaint and, therefore, denies the same.

149. This Complaint is accompanied by a certified copy of the prosecution history for the '015 Patent and the references cited therein. See Appx. A1 and A2.

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RESPONSE: Walmart admits that the Amended Complaint is accompanied by Appx. A1 and A2, which purport to be the certified copies of the prosecution history for the '015 Patent and the references cited therein.

150. NOCO owns by assignment all rights, title, and interest in the '015 Patent. See Ex. 6.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 6, which purport to be the assignment of the '015 Patent. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 150 of the Amended Complaint and, therefore, denies the same.

2. Non-Technical Description of the Patent

151. The '015 Patent relates to an improved portable jump starter incorporating a rechargeable lithium-ion battery and a microcontroller. The '015 Patent describes a novel apparatus that incorporates a power switch actuated by a microcontroller such that power will be delivered from the lithium-ion power pack to the output port only when the battery is connected to the output port and only when the battery is connected with the proper polarity of positive and negative terminals. This solves the problem of sparking or potential damage to the battery and/or bodily injury when the jumper terminals or clamps of the cables were inadvertently brought in contact with each other, or when positive and negative terminals were connected to the opposite polarity terminals in the vehicle to be jumped.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 151 of the Amended Complaint and, therefore, denies the same.

152. The '015 Patent has 23 claims, 1 of which is an independent claim. Complainant is asserting claims 1, 4, 11, 14, 18, 19 and 21.

RESPONSE: Walmart admits that the '015 Patent on its face has 23 claims, including one independent claim. Walmart further admits that Complainant has asserted claims 1, 4, 11, 14, 18, 19 and 21 of the '015 Patent.

3. Foreign Counterparts of the Patent

153. The following is a list of current foreign patents and foreign applications that are presently understood to correspond or otherwise relate to the '015 Patent:

- CA2,916,782 (Canada)
- GB2527858 (United Kingdom)
- DE10204114997B4 (Germany)
- (Australia) Patent Application (Approved) No. 20201223
- (Germany) Patent Application No. 102014020005.1
- (Germany) Patent Application No. 102014020004.3

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 153 of the Amended Complaint and, therefore, denies the same.

154. NOCO owns all right, title, and interest in and to each of these foreign patents and applications, there are no other foreign patents corresponding to the '015 Patent, and there are no other pending, rejected, or abandoned foreign patent applications corresponding to the '015 Patent.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 154 of the Amended Complaint and, therefore, denies the same.

4. Licensees to the Patent

155. All licensees to the '015 Patent are identified in Confidential Ex. 5C. There are no other licensees relating to the '015 Patent.

RESPONSE: Walmart admits that Amended Complainant attached Confidential Ex. 5C which appears to be a list of licensees. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the remainder of ¶ 155 of the Amended Complaint and, therefore, denies the same.

B. U.S. Patent No. 10,604,024

1. Identification of the Patent and Ownership

156. The '024 Patent, titled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection" issued on March 31, 2020 naming Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Ex. 2 (Certified copy of '024 Patent) at 1. The '024 Patent is based on U.S. Patent Application No. 15/691,884 filed on Aug. 31, 2017. Id. The '024 Patent is a continuation of Application No. 14/619,655, filed February 11, 2015, now U.S. Patent No. 9,770,992, which claims priority to PCT/US2014/045434, filed July 3, 2014. The '024 Patent will expire on July 3, 2034.

RESPONSE: Walmart admits that the '024 Patent is on its face entitled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection" and states on its face that it was issued on March 31, 2020, naming Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Walmart further admits that the '024 Patent on its face is based on U.S. Patent Application No. 15/691,884 filed on Aug. 31, 2017. Walmart further admits that the '024 Patent on its face is a continuation of Application No. 14/619,655, filed February 11, 2015, now U.S. Patent No. 9,770,992, which claims priority to PCT/US2014/045434, filed July 3, 2014. Walmart admits that the Amended Complaint is accompanied by Ex. 2, which purports to be a certified copy of the '024 Patent. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the remainder of ¶ 156 of the Amended Complaint and, therefore, denies the same.

157. This Complaint is accompanied by a certified copy of the prosecution history for the '024 Patent and the references cited therein. See Appx. B1 and B2.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Appx. B1 and B2, which purport to be the certified copies of the prosecution history for the '024 Patent and the references cited therein.

158. NOCO owns by assignment all rights, title, and interest in the '024 Patent. See Ex. 7.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 7, which purport to be the assignment of the '024 Patent. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 158 of the Amended Complaint and, therefore, denies the same.

2. Non-Technical Description of the Patent

159. The '024 Patent relates to an improved portable jump starter incorporating a rechargeable lithium-ion battery and a microcontroller. The '024 Patent is a continuation of the '015 Patent but claims inventive features not claimed in that patent, including: the device being turned on when the microcontroller receives simultaneous signals from the sensors indicating that the device's battery clamps are connected to the vehicle battery proper polarity; and the device being turned off when the microcontroller receives signals from the sensors indicating that the device's battery clamps have become disconnected from the vehicle battery and/or an improper polarity condition.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 159 of the Amended Complaint and, therefore, denies the same.

160. The '024 Patent has 30 claims, 3 of which are independent claims. Complainant is asserting claims 1, 4, 5, 6, 16, 19, 23, 24, 26, 29, 30.

RESPONSE: Walmart admits that the '024 Patent on its face has 30 claims, including 3 independent claims. Walmart further admits that Complainant has asserted claims 1, 4, 5, 6, 16, 19, 23, 24, 26, 29 and 30 of the '024 Patent.

3. Foreign Counterparts of the Patent

161. See Section IV.A.3, *supra.*

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 161 of the Amended Complaint and, therefore, denies the same.

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4. Licensees to the Patent

162. All licensees to the '024 Patent are identified in Confidential Ex. 5C. There are no other licensees relating to the '024 Patent.

RESPONSE: Walmart admits that Amended Complainant attached Confidential Ex. 5C which appears to be a list of licensees. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the remainder of ¶ 162 of the Amended Complaint and, therefore, denies the same.

V. THE ASSERTED TRADEMARKS

A. U.S. Trademark Reg. No. 4,811,656

163. The federal registration of the ULTRASAFE mark, Reg. No. 4,811,656, issued on September 15, 2015 to NOCO. NOCO has continuously used this mark in commerce since at least August 2014 for its jump starters (Classes 021 023, 026, 036, and 038.). Affidavits have been filed pursuant to Section 8 and 15 of the Lanham Act, 15 U.S.C.§§ 1058 and 1065, and this registration is incontestable. A copy of the Certificate of Registration for the Registered Trademark is attached hereto as Exhibit 3.

RESPONSE: Walmart admits that the Reg. No. 4,811,656 is on its face for ULTRASAFE mark and issued on September 15, 2015 to NOCO. Walmart admits that the Amended Complaint is accompanied by Exhibit 3, which purports to be a certified copy of the 4,811,656 trademark registration. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the remainder of ¶ 163 of the Amended Complaint and, therefore, denies the same.

164. Pursuant to Commission Rule 210.12(d), NOCO will file a certified copy of the prosecution history of the ULTRASAFE trademark for U.S. Trademark Reg. No. 4,811,656, as Appendix C.

RESPONSE: Walmart admits that the Amended Complaint attached Appendix C which appears to be an uncertified copy of the prosecution history of the ULTRASAFE trademark for

U.S. Trademark Reg. No. 4,811,656. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in the remainder of ¶ 164 of the Amended Complaint and, therefore, denies the same.

B. U.S. Trademark Reg. No. 4,811,749

165. The federal registration of the SAFELY JUMP START A DEAD BATTERY IN SECONDS mark, Reg. No. 4,811,749, issued on September 15, 2015 to NOCO. NOCO has continuously used this mark in commerce since at least August 2014 for its jump starters (Classes 021, 023, 026, 036, 038, 100, 101, and 102). Affidavits have been filed pursuant to Section 8 and 15 of the Lanham Act, 15 U.S.C. §§ 1058 and 1065, and this registration is incontestable. A copy of the Certificate of Registration for the Registered Trademark is attached hereto as Exhibit 4.

RESPONSE: Walmart admits that the Reg. No. 4,811,749 is on its face for SAFELY JUMP START A DEAD BATTERY IN SECONDS mark and issued on September 15, 2015 to NOCO. Walmart admits that the Amended Complaint is accompanied by Exhibit 4, which purports to be a certified copy of the 4,811,749 trademark registration. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in the remainder of ¶ 165 of the Amended Complaint and, therefore, denies the same.

166. Pursuant to Commission Rule 210.12(d), NOCO will file a certified copy of the prosecution history of the "Safely Jump Start a Dead Battery in Seconds" trademark for U.S. Trademark Reg. No. 4,811,749, as Appendix D.

RESPONSE: Walmart admits that Amended Complaint attached Appendix D which appears to be an uncertified copy of the prosecution history of the "Safely Jump Start a Dead Battery in Seconds" trademark for U.S. Trademark Reg. No. 4,811,749. Walmart lacks sufficient knowledge or information to form a belief as to the remaning allegations in the remainder of ¶ 166 of the Amended Complaint and, therefore, denies the same.

VI. UNFAIR ACTS OF THE PROPOSED RESPONDENTS

A. Infringement of the Asserted Patents

167. On information and belief, Respondents, without authorization, have been and still are infringing each of the Asserted Patents in the United States. Respondents' unlawful and unfair acts include the importation into the United States, sale for importation into the United States, or sale within the United States after importation of the infringing Accused Products. Respondents have violated, and continue to violate, Section 337 of the Tariff Act of 1930 in view of U.S. patent laws. Respondents are not licensed under the Asserted Patents.

RESPONSE: Walmart states that statements and allegations of ¶ 167 of the Amended Complaint contain opinions and legal arguments rather than factual assertions and, therefore, denies the same. Walmart states that the allegations contained in ¶ 167 of the Amended Complaint also include conclusions of law as to which no response is necessary. Walmart admits that it imported and sold after importation within the United States certain Accused Products but denies that it has engaged in any unlawful act as alleged by the Complainant.

168. Specifically, NOCO asserts that the Respondents directly infringe, literally or under the doctrine of equivalents, at least the following independent claims of the Asserted Patents, in violation of 35 U.S.C. §§ 271(a) and Section 337 (a)(1)(B)(i):

Claim Chart	'015 Patent	'024 Patent
Claim Chart 01-Carku	1	1, 29, 30
Claim Chart 02- Boltpower	1	1, 29, 30
Claim Chart 03- Smartech	1	1, 29, 30
Claim Chart 04-Weego	1	1, 29, 30
Claim Chart 05-Winplus	1	1, 29, 30
Claim Chart 06- Great Neck	1	
Claim Chart 07- ThiEye	1	1, 29, 30
Claim Chart 08- Energen/ Performance	1	1, 29, 30
Claim Chart 09- HALO	1	1, 29, 30
Claim Chart 10- Clore	1	1, 29, 30

Table 2. Asserted Independent Claims Infringed by Proposed Respondents

RESPONSE: Walmart denies the allegations in ¶ 168 of the Amended Complaint. Table 2 in ¶ 168 concerns parties not directed to Walmart. Walmart lacks sufficient knowledge or

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information to form a belief as to the allegations in Table 2 in ¶ 168 of the Amended Complaint and, therefore, denies the same.

169. For purposes of assessing infringement, the Accused Products are divided into groups based on suspected manufacturer. The claim charts are designated Claim Chart 01 through Claim Chart 10, and the Accused Products within each design group are set forth on Exhibit 9. The Accused Products within each design group share a common design, at least with respect to the portions relevant to the infringement analysis of the independent claims of the '015 and '024 Patent claims. Each of the Respondents imports, sells for importation, and/or sells within the United States after importation at least one of the Accused Products and therefore directly infringes, literally or under the doctrine of equivalents, one or more of claims 1, 4, 11, 14, 18, 19, 21 of the '015 Patent and/or one or more of claims 1, 4, 5, 6, 16, 19, 23, 24, 26, 29, 30 of the '024 Patent with respect to such Respondent's Accused Products.

RESPONSE: Walmart states that the first two sentences in ¶ 169 of the Amended Complaint are not an allegations. Thus, no response is required. To the extent any response is required, Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the first two sentences in ¶ 169 and, therefore, denies the same. Walmart denies all the allegations in the remainder of ¶ 169 of the Amended Complaint, except admits that Walmart imported and sold after importation within the United States certain Accused Products.

1. Claim Chart 01- Carku Accused Products

a) Carku Design

170. The Accused Products in Claim Chart 01 ("Carku Design") are lithium battery powered jump starters having a cable assembly that includes a relay and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an optocoupler sensor. The Carku Design Accused Products are offered by numerous sellers under multiple brand names. On information and belief, the Carku Design Accused Products are manufactured by at least Respondent Carku. The Tacklife T8 Pro model jump starter is representative of the Carku Design Accused Products.

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RESPONSE: The allegations in ¶ 170 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 170 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

171. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Carku Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Carku Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Carku Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 171 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 171 of the Amended Complaint and, therefore, denies the same.

172. A claim chart comparing independent claim 1 of the '015 Patent to the representative Carku Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 111.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 111, which on its face entitled "Claim Chart – Carku". The allegations in ¶ 172 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 172 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

173. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Carku Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and

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30 of the '024 Patent. Certain of the Carku Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Carku Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 173 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 173 of the Amended Complaint and, therefore, denies the same.

174. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Carku Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 111.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 111, which on its face entitled "Claim Chart – Carku". The allegations in ¶ 174 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 174 of the Amended Complaint and, therefore, denies the same.

2. Claim Chart 02- Boltpower Accused Products

a) Boltpower Design

175. The Accused Products in Claim Chart 02 ("Boltpower Design") are lithium battery powered jump starters that includes a relay and two sensors. The Boltpower Design Accused Products are offered by numerous sellers under multiple brand names. The BEATIT D11, Lemsir V1, and BEATIT D10 Pro model jump starters are representative of the three designs of Accused Products manufactured by Boltpower.

RESPONSE: The allegations in ¶ 175 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 175 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

176. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Boltpower Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Boltpower Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Boltpower Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 176 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 176 of the Amended Complaint and, therefore, denies the same.

177. A claim chart comparing independent claim 1 of the '015 Patent to the representative Boltpower Design Accused Products, and including photographs and drawings where applicable, is attached as Ex. 112.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 112, which on its face entitled "Claim Chart – BoltPower". The allegations in ¶ 177 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 177 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

178. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Boltpower Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Boltpower Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Boltpower Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 178 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 178 of the Amended Complaint and, therefore, denies the same.

179. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Boltpower Design Accused Products, and including photographs and drawings where applicable, is attached as Ex. 112.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 112, which on its face entitled "Claim Chart – BoltPower". The allegations in ¶ 179 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 179 of the Amended Complaint and, therefore, denies the same.

3. Claim Chart 03- Smartech Accused Products

a) Smartech Design

180. The Accused Products in Claim Chart 03 ("Smartech Design") are lithium battery powered jump starters offered under the SMARTECH brand and have a cable assembly that includes a relay and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an operational amplifier sensor. The SMARTECH JS-10000 model jump starter is representative of the Smartech Design Accused Products.

RESPONSE: The allegations in ¶ 180 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 180 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

181. On information and belief, select Respondents, including Respondent Smartech, import, sell for importation, and/or sell within the United States after importation the Design 05 Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Smartech Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The

Smartech Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 181 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 181 of the Amended Complaint and, therefore, denies the same.

182. A claim chart comparing independent claim 1 of the '015 Patent to the representative Smartech Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 113.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 113, which on its face entitled "Claim Chart – Smartech". The allegations in ¶ 182 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 182 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

183. On information and belief, select Respondents, including Respondent Smartech, import, sell for importation, and/or sell within the United States after importation the Smartech Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Smartech Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Smartech Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 183 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 183 of the Amended Complaint and, therefore, denies the same.

184. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Smartech Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 113.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 113, which on its face entitled "Claim Chart – Smartech". The allegations in ¶ 184 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 184 of the Amended Complaint and, therefore, denies the same.

4. Claim Chart 04- Weego Accused Products

a) Weego Design

185. The Accused Products in Claim Chart 04 ("Weego Design") are lithium battery powered jump starters offered under the WEEGO brand and have a cable assembly that includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an optocoupler sensor. The WEEGO 22S model jump starter is representative of the Weego Design Accused Products.

RESPONSE: The allegations in ¶ 185 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 185 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

186. On information and belief, select Respondents, including Respondent Carku, import, sell for importation, and/or sell within the United States after importation the Weego Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Weego Design Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Weego Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 186 concern another party and are not directed to Walmart. Walmart admits that it sold within the United States Weego Design Accused Products.

Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 186 of the Amended Complaint and, therefore, denies the same.

187. A claim chart comparing independent claim 1 of the '015 Patent to the representative Weego Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 114.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 114, which on its face entitled "Claim Chart – Weego". The allegations in ¶ 187 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 187 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

188. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Weego Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Weego Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Weego Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 188 concern another party and are not directed to Walmart. Walmart admits that it sold within the United States Weego Design Accused Products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 188 of the Amended Complaint and, therefore, denies the same.

189. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Weego Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 114.

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RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 114, which on its face entitled "Claim Chart – Weego". The allegations in ¶ 189 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 189 of the Amended Complaint and, therefore, denies the same.

5. Claim Chart 05- Winplus Accused Products

a) Winplus Design

190. The Accused Products in Claim Chart 05 ("Winplus Design") are lithium battery powered jump starters offered under the WINPLUS and TYPE-S brands and have a cable assembly that includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is also a resistive divider sensor. On information and belief, the WINPLUS and TYPE S brand jump starters are manufactured by Respondent Shenzhen Winplus. The Type S–AC56388-BLK model jump starter is representative of the Winplus Design Accused Products.

RESPONSE: The allegations in ¶ 190 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 190 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

191. On information and belief, select Respondents, including Respondent Winplus, import, sell for importation, and/or sell within the United States after importation the Winplus Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Winplus Design Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Winplus Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 191 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 191 of the Amended Complaint and, therefore, denies the same.

192. A claim chart comparing independent claim 1 of the '015 Patent to the representative Winplus Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 115.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 115, which on its face entitled "Claim Chart – Winplus". The allegations in ¶ 192 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 192 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

193. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Winplus Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Winplus Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Winplus Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 193 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 193 of the Amended Complaint and, therefore, denies the same.

194. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Winplus Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 115.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 115, which on its face entitled "Claim Chart – Winplus". The allegations in ¶ 194 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 194 of the Amended Complaint and, therefore, denies the same.

6. Claim Chart 06- Great Neck Accused Products

a) Great Neck Design

195. The Accused Products in Claim Chart 06 ("Great Neck Design") are lithium battery powered jump starters having a SMART CLAMP branded cable assembly. The cable assembly includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, includes a resistive divider sensor and transistor. The second sensor, which is the claimed reverse polarity sensor, is a resistive divider sensor. The Great Neck Accused Products are offered under at least the OEM Tools brand. The OEMTOOLS 24474 model jump starter is representative of the Great Neck Accused Products.

RESPONSE: The allegations in ¶ 195 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 195 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

196. On information and belief, select Respondents, including OEM Tools, import, sell for importation, and/or sell within the United States after importation the Great Neck Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Great Neck Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Great Neck Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 196 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 196 of the Amended Complaint and, therefore, denies the same.

197. A claim chart comparing independent claim 1 of the '015 Patent to the representative Great Neck Accused Product, and including photographs and drawings where applicable, is attached as Ex. 116.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 116, which on its face entitled "Claim Chart – Great Neck". The allegations in ¶ 197 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 197 of the Amended Complaint and, therefore, denies the same.

7. Claim Chart 07- ThiEye Accused Products

a) ThiEye Design

198. The Accused Products in Claim Chart 07 ("ThiEye Design") are lithium battery powered jump starters having a SMART CABLE branded cable assembly. The cable assembly includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is also a resistive sensor. The ThiEye Design Accused Products manufactured by Respondent ThiEye are offered under multiple brands, namely BUTURE, Finnemge, and UTRAI. The BUTURE BR500 model jump starter is representative of the ThiEye Design Accused Products.

RESPONSE: The allegations in ¶ 198 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 198 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

199. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the ThiEye Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the ThiEye Design Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The ThiEye Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 199 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 199 of the Amended Complaint and, therefore, denies the same.

200. A claim chart comparing independent claim 1 of the '015 Patent to the representative ThiEye Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 117.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 117, which on its face entitled "Claim Chart – ThiEye". The allegations in ¶ 200 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 200 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

201. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the ThiEye Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the ThiEye Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The ThiEye Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 201 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 201 of the Amended Complaint and, therefore, denies the same.

202. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative ThiEye Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 117.

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RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 117, which on its face entitled "Claim Chart – ThiEye". The allegations in ¶ 202 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 202 of the Amended Complaint and, therefore, denies the same.

8. Claim Chart 08- Energen/Performance Tool Accused Products

a) Energen/Performance Tool Design

203. The Accused Products in Claim Chart 08 ("Energen/ Performance Tool Design") are lithium battery powered jump starters having a cable assembly labeled as "SMART BOOSTER CABLE". The cable assembly includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive sensor. The second sensor, which is the claimed reverse polarity sensor, is a resistive divider sensor. The Energen/Performance Tool Accused Products are offered under multiple brands, including Energen and Performance Tool. The ENERGEN AL12 model jump starter is representative of the Design 11 Accused Products.

RESPONSE: The allegations in ¶ 203 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 203 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

204. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Energen/Performance Tool Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Energen/Performance Tool Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Energen/Performance Tool Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 204 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 204 of the Amended Complaint and, therefore, denies the same.

205. A claim chart comparing independent claim 1 of the '015 Patent to the representative Design 11 Accused Product, and including photographs and drawings where applicable, is attached as Ex. 118.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 118, which on its face entitled "Claim Chart – Energen & Performance Tool". The allegations in ¶ 205 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 205 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

206. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Energen/Performance Tool Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Energen/Performance Tool Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Energen/Performance Tool Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 206 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 206 of the Amended Complaint and, therefore, denies the same.

207. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Energen/Performance Tool Accused Product, and including photographs and drawings where applicable, is attached as Ex. 118.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 118, which on its face entitled "Claim Chart – Energen & Performance Tool". The allegations in ¶ 207 concern another party and are not directed to Walmart. Walmart lacks sufficient

knowledge or information to form a belief as to the allegations in ¶ 207 of the Amended Complaint and, therefore, denies the same.

9. Claim Chart 09- HALO Accused Products

a) HALO Design

208. The Accused Products in Claim Chart 09 ("HALO Design") are lithium battery powered jump starters offered under the HALO BOLT brand, that include a relay and two sensors within the main housing of the jump starter. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an optocoupler sensor. The HALO BOLT 4400 model jump starter is representative of the HALO Design Accused Products.

RESPONSE: The allegations in ¶ 208 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 208 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

209. On information and belief, select Respondents, including Halo2Cloud, import, sell for importation, and/or sell within the United States after importation the HALO Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the HALO Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The HALO Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 209 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 209 of the Amended Complaint and, therefore, denies the same.

210. A claim chart comparing independent claim 1 of the '015 Patent to the representative HALO Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 119.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 119, which on its face entitled "Claim Chart – HALO". The allegations in ¶ 210 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 210 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

211. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the HALO Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the HALO Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The HALO Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 211 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 211 of the Amended Complaint and, therefore, denies the same.

212. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative HALO Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 119.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 119, which on its face entitled "Claim Chart – HALO". The allegations in ¶ 212 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 212 of the Amended Complaint and, therefore, denies the same.

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10. Claim Chart 10- Clore Accused Products

a) Clore Design

213. The Accused Products in Claim Chart 10 ("Clore Design") are lithium battery powered jump starters offered under the Jump-n-Carry brand that have the power switch and two sensors within the main housing of the jump starter. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is optocoupler sensor. The Jump-n-Carry JNC345 model jump starter is representative of the Clore Design Accused Products.

RESPONSE: The allegations in ¶ 213 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 213 of the Amended Complaint and, therefore, denies the same.

b) Infringement of the '015 Patent

214. On information and belief, select Respondents, including Respondent Clore Automotive, sell for importation, and/or sell within the United States after importation the Clore Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Clore Design Accused Products also infringe one or more of dependent claims 4, 10, 14, 18, 19 and 21 of the '015 Patent. The Clore Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 214 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 214 of the Amended Complaint and, therefore, denies the same.

215. A claim chart comparing independent claim 1 of the '015 Patent to the representative Clore Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 120.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 120, which on its face entitled "Claim Chart – Clore". The allegations in ¶ 215 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to

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form a belief as to the allegations in ¶ 215 of the Amended Complaint and, therefore, denies the same.

c) Infringement of the '024 Patent

216. On information and belief, select Respondents, including Respondent Clore Automotive, import, sell for importation, and/or sell within the United States after importation the Clore Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Clore Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Clore Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: The allegations in ¶ 216 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 216 of the Amended Complaint and, therefore, denies the same.

217. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Clore Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 120.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exhibit 120, which on its face entitled "Claim Chart – Clore". The allegations in ¶ 217 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 217 of the Amended Complaint and, therefore, denies the same.

B. Infringement of the Asserted Trademarks

218. NOCO owns all right, title, and interest in the Asserted Trademarks and has standing to bring an action for trademark infringement under the Lanham Act, 15 U.S.C. § 1051 et seq.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 218 of the Amended Complaint and, therefore, denies the same.

219. The Asserted Trademarks are on the Principal Register and such registration is prima facie evidence of validity, including secondary meaning. 15 U.S.C. § 1057(b). The Asserted Trademarks are used in commerce by NOCO to market, advertise, and sell the Boost® jump starters.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 219 of the Amended Complaint and, therefore, denies the same.

220. As explained below, a number of the Respondents use at least one of the Asserted Trademarks in point-of-sale displays posted on online retail stores with the intention of attracting U.S. consumers. These point-of-sale webpages, which include Respondents' own sites as well as third-party commerce sites including Amazon, contain images superimposed with NOCO's Asserted Trademarks and/or use NOCO's Asserted Trademarks in the descriptions of the Accused Products. The webpages provide means for purchasing the Accused Products. Such displays are likely to cause confusion or mistake, and to deceive potential consumers and the public as to the source, origin, sponsorship or approval of Respondents' Accused Products, or as to the affiliation, connection, or association between Respondents and/or their jump starters and NOCO and/or the Boost(R) jump starters.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 219 of the Amended Complaint and, therefore, denies the same.

221. The exhibits cited below are screenshots of the Accused Products being displayed on a webpage where the product may be purchased. The importation of the Accused Products via these webpages is further described in Section VII.

RESPONSE: Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 221 of the Amended Complaint and, therefore, denies the same.

222. The Asserted Trademarks are valid, owned by NOCO, and these webpages demonstrate a likelihood of confusion at the point-of-sale, and therefore Respondents are in violation of Section

32 of the Lanham Act. 15 U.S.C. § 1114. The Respondents identified in the table below import into the United States, sell for importation, and/or sell in the United States after importation certain jump starters and components thereof, using point of sale webpages, and/or packaging that infringe the NOCO Trademarks:

Ultrasafe ('656 TM)	Safely Jump Start a Dead Battery in Seconds ('749 TM)
Audew	Autown
Autown	Beatit
Jumtop	Imazing
Sanrock	Jumtop
Topdon	Nexpow
Trekpow	Sanrock
	Trekpow

Table 3. Accused Products Infringing NOCO Asserted Trademarks

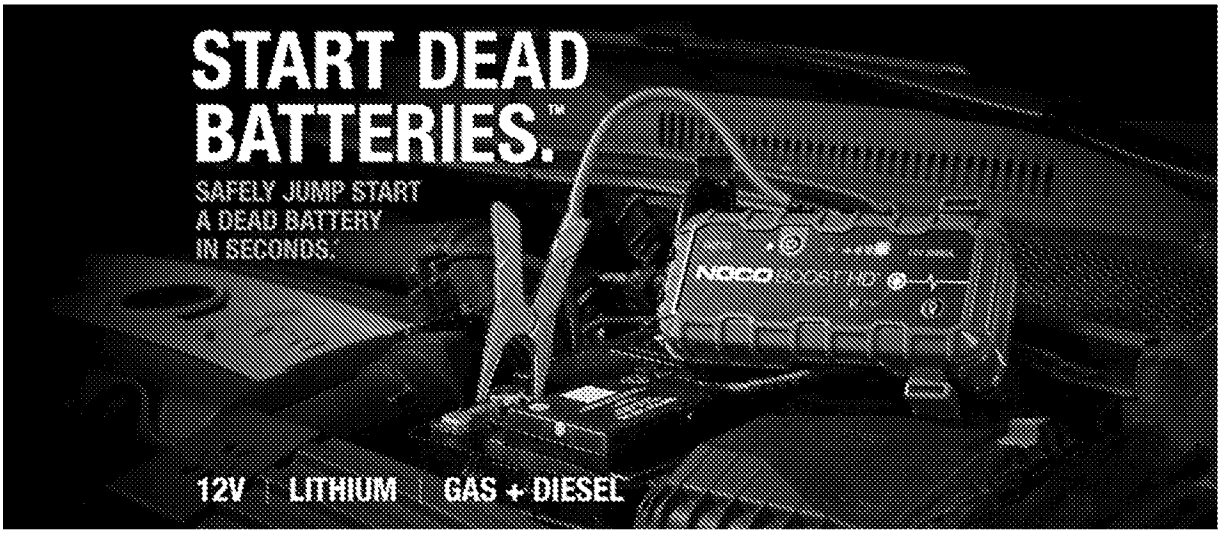


Fig. 3- NOCO Website- Use of the '749 Trademark



Fig. 4- NOCO Website- Use of the '656 and '749 Trademarks. Ex. 104

RESPONSE: The allegations in ¶ 222 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 222 of the Amended Complaint and, therefore, denies the same.

Audew

223. The Audew brand uses the NOCO "Ultrasafe" and "Safely Jump Start a Dead Battery in Seconds" trademarks on its website and Amazon listing for its jump starters, which infringes NOCO's '656 and '749 Trademarks and are likely to cause confusion at the point-ofsale. See Ex. 27 and 50; see also Ex. 121 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exs 27 and 50, which on the face Audew's website and Amazon.com listing for Audew jump starters, respectively. Walmart further admits that the Amended Complaint is accompanied by Ex. 121. The allegations in ¶ 223 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 223 of the Amended Complaint and, therefore, denies the same.

Autown

224. The Amazon listing for the Autown brand of jump starters includes the phrase "jump starter your dead battery in seconds," and "jump start dead battery fast and safely" which infringes NOCO's '749 Trademark and is likely to cause confusion at the point-of-sale. See Ex. 28 and 29. The Autown brand also markets its products using the term "ultra-safe" infringing the '656 Trademark. See Ex. 29; see also Ex. 52 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exs 28 and 29, which on the face Amazon.com listing for Autown jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 52. The allegations in ¶ 224 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 224 of the Amended Complaint and, therefore, denies the same.

Beatit

225. The Beatit brand uses the phrases "Safely Jumper start a dead battery in seconds" and "jump start a dead battery in seconds" on their Amazon listings for its jump starters, both of which infringe NOCO's '749 Trademark and are likely to cause confusion at the point-of -sale. See Ex. 30; see also Ex. 122 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 30, which on the face Amazon.com listing for Beatit jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 122. The allegations in ¶ 225 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 225 of the Amended Complaint and, therefore, denies the same.

Imazing

226. The Imazing brand jump starter listing on Amazon uses the phrase "safely jump start a dead battery in seconds" which infringes the NOCO '749 Trademark and is likely to cause confusion at the point-of-sale. See Ex. 33; see also Ex. 124 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 33, which on the face listing for Imazing jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 124. The allegations in ¶ 226 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 226 of the Amended Complaint and, therefore, denies the same.

Jumtop

227. The Jumtop brand of jump starters uses the phrases "ULTRA SAFE," "ultra-safe" and "jump start a dead battery in seconds" on its Amazon listings for its jump starters, which infringes both the NOCO '656 and '749 Trademarks and is likely to cause confusion at the pointof-sale. See Ex. 34, 35 and 36; see also Ex. 72 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exs 34, 35 and 36, which on the face Amazon.com listing for Jumtop jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 72. The allegations in ¶ 227 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 227 of the Amended Complaint and, therefore, denies the same.

Nexpow

228. The Nexpow brand of jump starters uses the phrase "jump start a dead battery in seconds" on its Amazon listing for its jump starters, which infringes the NOCO '749 Trademark and is likely to cause confusion at the point-of-sale. See Ex. 37; see also Ex. 79 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 37, which on the face Amazon.com listing for Nexpow jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 79. The allegations in ¶ 228 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 228 of the Amended Complaint and, therefore, denies the same.

Sanrock

229. The Sanrock brand of jump starters uses the phrases "safely jump start a dead battery in seconds" and "ultra-safe" in its Amazon listings for its jump starters, which infringes the NOCO '656 and '749 Trademarks and is likely to cause confusion at the point-of-sale. See Ex. 38 and 39; see also Ex. 86 (importation evidence).

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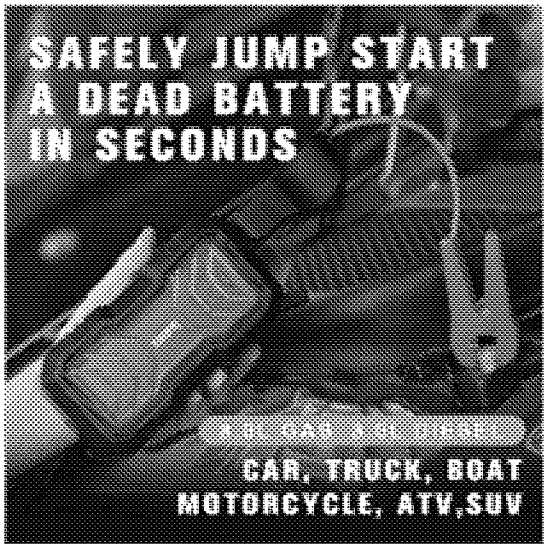


Fig.5- Image from Sanrock Amazon listing showing infringement of '749 Trademark

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exs 38 and 39, which on the face Amazon.com listing for Sanrock jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 86. The allegations in ¶ 229 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 229 of the Amended Complaint and, therefore, denies the same.

Topdon

230. The Topdon brand of jump starters uses the phrase "ultra safe" on the packaging of its Volcano jump starters, infringing the NOCO '656 Trademark. See Ex. 40; see also Ex. 92 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 40, which on the face packaging of Topdon jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 92. The allegations in ¶ 230 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 230 of the Amended Complaint and, therefore, denies the same.

Trekpow

231. The Trekpow brand of jump starters uses the phrases "ultra-safe," "jump start dead battery in seconds," and "safely jump start a dead battery in seconds" in its Amazon listings, which infringes the NOCO '656 and '749 Trademarks and is likely to cause confusion at the point-ofsale. See Ex. 41, 42 and 43; see also Ex. 95 (importation evidence).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exs 41, 42 and 43, which on the face Amazon.com listing for Trekpow jump starters. Walmart further admits that the Amended Complaint is accompanied by Ex. 95. The allegations in ¶ 231 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 231 of the Amended Complaint and, therefore, denies the same.

VII. SPECIFIC INSTANCES OF IMPORTATION AND SALE

232. As stated above, on information and belief, a subset of Respondents manufactures and/or have manufactured outside the United States, import into the United States, and/or sell for importation into the United States the Accused Products. Other named Respondents import into the United States and/or sell after importation into the United States the Accused Products. The Accused Products, certain portable battery jump starters and related components, are imported, sold for importation, and/or sold after importation as described below.

RESPONSE: Walmart admits that it imported and sold after importation in the United States certain Accused Products. Walmart further admits that third party retailers may sell portable battery jump starters through Walmart's online marketplace at Walmart.com. Walmart lacks sufficient knowledge or information to form a belief as to the remaing allegations in ¶ 232 of the Amended Complaint and, therefore, denies the same.

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A. Carku Brands

1. AllStart

233. On information and belief, model numbers Boost (No. 550), Boost Max (No. 560), Boost Ultra (No. 590), and Micro-Boost (No. 540) (collectively, the "AllStart Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name AllStart. See Ex. 44C, ¶¶ 5-6.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 233 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 233 of the Amended Complaint and, therefore, denies the same.

234. On information and belief, products sold under the brand AllStart are manufactured by and/or imported for sale by Respondents Horizon Tool, Carku, and Boltpower. See Ex. 44C, ¶¶ 5-6.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 234 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 234 of the Amended Complaint and, therefore, denies the same.

235. The AllStart Accused Products are sold after importation into the United States. For example, a receipt from cal-vantools.com showing the purchase of an AllStart Boost (No.550) at an address in the United States is attached as Ex. 46. On information and belief, the AllStart Accused Products are also sold by Walmart, Advance Auto, and Horizon Tool. See, e.g., https://www.walmart.com/ip/AllStart-540-Micro-Boost-Battery-Jump-Starter-500AMP-V6Engines/635710663.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 46, which on its face is an email. Walmart denies selling the AllStart Accused Products. Walmart admits that the link shows an AllStart Accused Product for sale by Speedway Motors, INC through the Walmart.com online marketplace, where third-party retailers may sell products.

Walmart lacks sufficient knowledge or information to form a belief as to the remaing allegations in ¶ 234 of the Amended Complaint and, therefore, denies the same.

236. The packaging of the AllStart Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 5 (citing Ex. 46).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 236 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 236 of the Amended Complaint and, therefore, denies the same.

2. Antigravity Batteries

237. On information and belief, model numbers XP-1, XP-10, XP-10-HD, and XP-3 (collectively, the "Antigravity Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Antigravity. See Ex. 44C, ¶¶ 9-10.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 237 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 237 of the Amended Complaint and, therefore, denies the same.

238. On information and belief, products sold under the brand Antigravity are manufactured by and/or imported for sale by Respondents Antigravity, Carku, and Gulin. See Ex. 44C, ¶¶ 9-10.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 238 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 238 of the Amended Complaint and, therefore, denies the same.

239. The Antigravity Accused Products are sold after importation into the United States. For example, a receipt from antigravitybatteries.com showing the purchase of an Antigravity XP1 and XP-10-HD at an address in the United States is attached as Ex. 48. The Antigravity Accused Products are also sold by Respondent Walmart. See, e.g., https://www.walmart.com/ip/Antigravity-Batteries-XP-10-HD-Heavy-Duty-MICRO-STARTJump-Starter-Portable-Power-Supply-Kit/580014186.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 48, which on its face is an email. Walmart denies selling the Antigravity Accused Products. Walmart admits that the link shows an Antigravity Accused Product for sale by DiscountCentralOnline through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the remaing allegations in ¶ 239 of the Amended Complaint and, therefore, denies the same.

240. The packaging of the Antigravity Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 10 (citing Ex. 48).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 240 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 240 of the Amended Complaint and, therefore, denies the same.

3. Audew

241. On information and belief, model numbers Epower-146 (1000A/10800mAh), 500A/13800mAH, 800A/16800mAh, Epower-172 (1500A/17000mAh), and Epower-155 (1500A/2000mAh) (collectively, the "Audew Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Audew. See Ex. 44C, ¶¶ 13-14.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 241 concern another party

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and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 241 of the Amended Complaint and, therefore, denies the same.

242. On information and belief, products sold under the brand Audew are manufactured by and/or imported for sale by Respondents Carku and Guangzhou Unique Electronics**[Respondent Removed]**. See Ex. 44C, ¶¶ 13-14; Ex. 121.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 242 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 242 of the Amended Complaint and, therefore, denies the same.

243. The Audew Accused Products are sold after importation into the United States. For example, a receipt from audew.com showing the purchase of an Audew Epower-146 (1000A/10800mAh) and Epower-172 (1500A/17000mAh) at an address in the United States is attached as Ex. 121. The Audew Accused Products are also sold by Respondent Walmart. See, e.g., https://www.walmart.com/ip/Audew-Jump-Starter-Car-Auto-Battery-Jump-Starter-Portable2000A-Charger-20000mAh/226026281?findingMethod=wpa

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 48, which on its face is an email. Walmart denies selling the Audew Accused Products. Walmart admits that the link shows an Audew Accused Product for sale by MTONY LLC through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the remaing allegations in ¶ 243 of the Amended Complaint and, therefore, denies the same.

244. The packaging of the Audew Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 11; Ex. 121.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 244 concern another party

and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 244 of the Amended Complaint and, therefore, denies the same.

4. Autogen [Respondent Removed]

245. On information and belief, model number MJS-P111B (4000A) (the "Autogen Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Autogen. See Ex. 44C, ¶¶ 15-16.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 245 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 245 of the Amended Complaint and, therefore, denies the same.

246. On information and belief, products sold under the brand Autogen **[Respondent Removed]**are manufactured by and/or imported for sale by Respondents Autogen and Carku. See Ex. 44C, ¶¶ 15-16.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 246 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 246 of the Amended Complaint and, therefore, denies the same.

247. The Autogen**[Respondent Removed]** Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Autogen MJS-P111B (4000A) at an address in the United States is attached as Ex. 51.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 51, which on its face includes a receipt. The allegations in ¶ 247 concern another party and are not

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directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 247 of the Amended Complaint and, therefore, denies the same.

248. The packaging of the Autogen **[Respondent Removed]** Accused Product indicates that the product was "Made in China." See Ex. 44C, ¶ 15 (citing Ex. 51).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 248 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 248 of the Amended Complaint and, therefore, denies the same.

5. Freeman

249. On information and belief, model number P800AJS (the "Freeman Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Freeman. See Ex. 44C, ¶¶ 47-48.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 249 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 249 of the Amended Complaint and, therefore, denies the same.

250. On information and belief, products sold under the brand Freeman are manufactured by and/or imported for sale by Respondents Prime Global Products and Carku. See Ex. 44C, ¶¶ 47-48.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 250 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 250 of the Amended Complaint and, therefore, denies the same.

251. The Freeman Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Freeman P800AJS at an address in the United States is attached as Ex. 66.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 66, which on its face includes a receipt. The allegations in ¶ 251 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 251 of the Amended Complaint and, therefore, denies the same.

252. The packaging of the Freeman Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 47 (citing Ex. 66).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 252 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 252 of the Amended Complaint and, therefore, denies the same.

6. Gooloo

253. On information and belief, model numbers GP1500, GP200, GP37-Plus, GP80 (800A), and GT-1500 (collectively, the "Gooloo Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Gooloo. See Ex. 44C, ¶¶ 49-51.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 253 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 253 of the Amended Complaint and, therefore, denies the same.

254. On information and belief, products sold under the brand Gooloo are manufactured by and/or imported for sale by Respondent Gooloo and Carku. See Ex. 44C, ¶¶ 41-42.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 254 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 254 of the Amended Complaint and, therefore, denies the same.

255. The Gooloo Accused Products are sold after importation into the United States. For example, receipts from Amazon.com showing the purchase of a Gooloo GP80 (800A), GP200, and GT-1500 at an address in the United States is attached as Ex. 67. The Gooloo Accused Products are also sold by Respondent Walmart. See, e.g., https://www.walmart.com/ip/GOOLOO-800Amp-12-Volt-SuperSafe-Car-Jump-Starter-with-LED-Flashlight-and-USB-for-Up-to-4-5-Liter-Gasoline/801082784

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 67, which on its face is an email. Walmart denies selling the Gooloo Accused Products. Walmart admits that the link shows a Gooloo Accused Product for sale by Gooloo Technology LLC through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 255 of the Amended Complaint and, therefore, denies the same.

256. The packaging of the Gooloo Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 49-50 (citing Ex. 57).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 256 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 256 of the Amended Complaint and, therefore, denies the same.

7. Grepro [Respondent Removed]

257. On information and belief, model numbers GP-JS-1500A (GP71C) and GP-JS500A (collectively, the "Grepro Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Grepro. See Ex. 44C, ¶¶ 52-53.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 257 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 257 of the Amended Complaint and, therefore, denies the same.

258. On information and belief, products sold under the brand Grepro**[Respondent Removed]** are manufactured by and/or imported for sale by Respondents Huizhou Grepro E-Commerce and Carku. See Ex. 44C, ¶¶ 52-53. The Grepro Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Grepro GP-JS-1500A (GP71C) at an address in the United States is attached as Ex. 131.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart further admits that the Amended Complaint is accompanied by Ex. 131, which on its face includes a receipt. The allegations in ¶ 258 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 258 of the Amended Complaint and, therefore, denies the same.

259. The packaging of the Grepro**[Respondent Removed]** Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 52 (citing Ex. 68); Ex. 131.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 259 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 259 of the Amended Complaint and, therefore, denies the same.

8. iClever

260. On information and belief, model number IC-JQ21Y (the "iClever Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name iClever. See Ex. 44C, ¶¶ 56-58.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 260 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 260 of the Amended Complaint and, therefore, denies the same.

261. On information and belief, products sold under the brand iClever are manufactured by and/or imported for sale by Respondent Carku. See Ex. 44C, ¶¶ 56-58.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 261 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 261 of the Amended Complaint and, therefore, denies the same.

262. On information and belief, the iClever Accused Product is sold after importation into the United States. See Ex. 44C, ¶¶ 56-58 (citing Ex. 70).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 262 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 262 of the Amended Complaint and, therefore, denies the same.

263. On information and belief, the iClever Accused Product is manufactured in China. See Ex. 44C, ¶¶ 56-58 (citing Ex. 70).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 263 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 263 of the Amended Complaint and, therefore, denies the same.

9. M Moock

264. On information and belief, model numbers MK200 (1500A) and MK800 (2000A) (collectively, the "M Moock Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name M Moock. See Ex. 44C, ¶¶ 74-75.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 264 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 264 of the Amended Complaint and, therefore, denies the same.

265. On information and belief, products sold under the brand M Moock are manufactured by and/or imported for sale by Respondent Shenzhen Moock**[Respondent Removed]**. See Ex. 44C, ¶¶ 74-75.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 265 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 265 of the Amended Complaint and, therefore, denies the same.

266. The M Moock Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a M Moock MK800 (2000A) at an address in the United States is attached as Ex. 125.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 125, which on its face includes photos of a Moock product. The allegations in ¶ 266 concern another

party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 266 of the Amended Complaint and, therefore, denies the same.

267. The packaging of the M Moock Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 71; Ex. 125.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 267 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 267 of the Amended Complaint and, therefore, denies the same.

10. Nekteck

268. On information and belief, model numbers NK-JS19800 (2000A/19800mAh), NKJS12000 (D31) (500A/12000mAh), NK-JS12000 (600A/16800mAh), and D45 (800A/20000mAh) (collectively, the "Nekteck Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Nekteck. See Ex. 44C, ¶¶ 76-77.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 268 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 268 of the Amended Complaint and, therefore, denies the same.

269. On information and belief, products sold under the brand Nekteck are manufactured by and/or imported for sale by Respondents Nekteck, Medcursor**[Respondent Removed]**, and Sictec Instruments**[Respondent Removed]**. See Ex. 44C, ¶¶ 76-77.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 269 concern another party

and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 269 of the Amended Complaint and, therefore, denies the same.

270. The Nekteck Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Nekteck NK-JS12000 (D31) (500A/12000mAh) and NK-JS12000 (600A/16800mAh) at an address in the United States is attached as Ex. 132.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 132, which on its face includes a receipt. The allegations in ¶ 270 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 270 of the Amended Complaint and, therefore, denies the same.

271. The packaging of the Nekteck Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 76 (citing Ex. 78); Ex. 132.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 271 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 271 of the Amended Complaint and, therefore, denies the same.

11. PowerMax

272. On information and belief, model numbers PM91004 and PM91006 (collectively, the "PowerMax Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name PowerMax. See Ex. 44C, ¶¶ 88-89

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 272 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 272 of the Amended Complaint and, therefore, denies the same.

273. On information and belief, products sold under the brand PowerMax are manufactured by and/or imported for sale by Respondents PowerMax and Carku. See Ex. 44C, ¶¶ 88-89.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 273 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 273 of the Amended Complaint and, therefore, denies the same.

274. The PowerMax Accused Products are sold after importation into the United States. For example, a receipt from Home Depot (homedepot.com) showing the purchase of a PowerMax PM91006 at an address in the United States is attached as Ex. 84.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 84, which on its face includes a receipt. The allegations in ¶ 274 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 274 of the Amended Complaint and, therefore, denies the same.

275. On information and belief, the PowerMax Accused Products are manufactured in China. See Ex. 44C, ¶ 88 (citing Ex. 84).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 275 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 275 of the Amended Complaint and, therefore, denies the same.

12. Tacklife

276. On information and belief, model numbers KP120, KP200, T6, T8 (Newer Model), T8 Max, T8 MAX, and T8 Pro (collectively, the "Tacklife Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the

United States, and/or sold within the United States after importation under the brand name Tacklife. See Ex. 44C, ¶¶ 103-107.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 276 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 276 of the Amended Complaint and, therefore, denies the same.

277. On information and belief, products sold under the brand Tacklife are manufactured by and/or imported for sale by Respondents Aukey**[Respondent Removed]** and Shenzhen Take Tools. See Ex. 44C, ¶¶ 103-107.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 277 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 277 of the Amended Complaint and, therefore, denies the same.

278. The Tacklife Accused Products are sold after importation into the United States. For example, receipts from Amazon.com showing the purchase of a Tacklife T8, T8 (Newer Model), T8 MAX, and T8 Pro at an address in the United States are attached as Ex. 126.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 126, which on its face includes receipts. The allegations in ¶ 278 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 278 of the Amended Complaint and, therefore, denies the same.

279. The packaging of the Tacklife Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 103-106; Ex. 126.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exs. 44C and 126. The allegations in ¶ 279 concern another party and are not directed to Walmart.

Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 279 of the Amended Complaint and, therefore, denies the same.

13. Xiaomi

280. On information and belief, model number Midrive PS02 (11100 mAh 600A) (the "Xiaomi Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Xiaomi. See Ex. 44C, ¶¶ 131-132; Ex. 130C.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst and Ex. 130C, which on its face a supplement declaration of Anne E. Hurst. The allegations in ¶ 280 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 280 of the Amended Complaint and, therefore, denies the same.

281. On information and belief, products sold under the brand Xiaomi are manufactured by and/or imported for sale by Respondents 70mai and Carku. See Ex. 44C, ¶¶ 131-133; Ex. 130C.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst and Ex. 130C, which on its face a supplement declaration of Anne E. Hurst. The allegations in ¶ 281 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 281 of the Amended Complaint and, therefore, denies the same.

282. The Xiaomi Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a PS02 (11100 mAh 600A) jump starter at an address in the United States is attached as Ex. 129. In addition, Walmart.com and Amazon.com listings indicate the Xiaomi Accused Product is manufactured by and/or imported by Respondent 70mai. See Ex. 44C, ¶¶ 131-133 (citing Ex. 102); Ex. 130C.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst and Ex. 130C, which on its face a supplement declaration of Anne E. Hurst. Walmart denies selling the Xiaomi Accused Product. Walmart admits that Ex. 102 shows a Xiaomi Accused Product for sale by Joybuy through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 282 of the Amended Complaint and, therefore, denies the same.

283. The packaging of the Xiaomi Accused Product identifies "70mai Co., Ltd." and indicates it was "Made in China." See Ex. 44C, ¶¶ 131-133 (citing Ex. 102); Ex. 130C (citing Ex. 129).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst and Ex. 130C, which on its face a supplement declaration of Anne E. Hurst. The allegations in ¶ 283 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 283 of the Amended Complaint and, therefore, denies the same.

B. Boltpower Brands

1. Ampeak

284. On information and belief, model number JS1 (the "Ampeak Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Ampeak. See Ex. 44C, ¶¶ 7-8.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 284 concern another party

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and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 284 of the Amended Complaint and, therefore, denies the same.

285. On information and belief, products sold under the brand Ampeak are manufactured by and/or imported for sale by Respondent Valuelink. See Ex. 44C, ¶¶ 5-6.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 285 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 285 of the Amended Complaint and, therefore, denies the same.

286. The Ampeak Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Ampeak JS1 at an address in the United States is attached as Ex. 47.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 47, which on its face includes a receipt. The allegations in ¶ 286 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 286 of the Amended Complaint and, therefore, denies the same.

287. The packaging of the Ampeak Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 7 (citing Ex. 47).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 287 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 287 of the Amended Complaint and, therefore, denies the same.

2. Arteck

288. On information and belief, model numbers A7, D29, JS08, and JS12 (collectively, the "Arteck Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Arteck. See Ex. 44C, ¶¶ 11-12.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 288 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 288 of the Amended Complaint and, therefore, denies the same.

289. On information and belief, products sold under the brand Arteck are manufactured by and/or imported for sale by Respondents Arteck Electronic and Boltpower. See Ex. 44C, ¶¶ 11-12.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 289 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 289 of the Amended Complaint and, therefore, denies the same.

290. The Arteck Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Arteck A7 at an address in the United States is attached as Ex. 49.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 49, which on its face includes a receipt. The allegations in ¶ 290 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 290 of the Amended Complaint and, therefore, denies the same.

291. The packaging of the Arteck Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 11 (citing Ex. 49).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 291 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 291 of the Amended Complaint and, therefore, denies the same.

3. Autown

292. On information and belief, model numbers RP-PI-01 (1000A), RP-PI02 (500A/10000mAh), RP-PI-03 (800A), and RP-PI-04 (2000A) (collectively, the "Autown Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Autown. See Ex. 44C, ¶¶ 17-18.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 292 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 292 of the Amended Complaint and, therefore, denies the same.

293. On information and belief, products sold under the brand Autown are manufactured by and/or imported for sale by Respondents Boltpower and Zhejiang Qingyou Electronic. See Ex. 44C, ¶¶ 17-18.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 293 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 293 of the Amended Complaint and, therefore, denies the same.

294. The Autown Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Autown RP-PI-03 (800A) at an address in the United States is attached as Ex. 52.

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RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 52, which on its face includes a receipt. The allegations in ¶ 294 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 294 of the Amended Complaint and, therefore, denies the same.

295. The packaging of the Autown Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 17 (citing Ex. 52).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 295 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 295 of the Amended Complaint and, therefore, denies the same.

4. Battery Tender

296. On information and belief, model numbers 030-1011-WAL (1000A/8000mAh), 030-1011-WH (1000A/8000mAh), 030-1000-PM (600A/6000mAh), and 030-1010-WH (800A/7200mAh) (collectively, the "Battery Tender Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Battery Tender. See Ex. 44C, ¶¶ 19-20.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 296 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 296 of the Amended Complaint and, therefore, denies the same.

297. On information and belief, products sold under the brand Battery Tender are manufactured by and/or imported for sale by Respondents Deltran and Boltpower. See Ex. 44C, ¶¶ 19-20.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 297 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 297 of the Amended Complaint and, therefore, denies the same.

298. The Battery Tender Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Battery Tender 0301010-WH (800A/7200mAh) at an address in the United States is attached as Ex. 53.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 53, which on its face includes a receipt. The allegations in ¶ 298 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 298 of the Amended Complaint and, therefore, denies the same.

299. The packaging of the Battery Tender Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 19 (citing Ex. 53).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 299 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 299 of the Amended Complaint and, therefore, denies the same.

5. Beatit

300. On information and belief, model numbers B10 (500A), B10 Pro (800A), B7 (1200A), BP101 (2200A), D11 (800A), G18 (2000A), and G22 (1500A) (collectively, the "Beatit Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Beatit. See Ex. 44C, ¶¶ 21-23.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 300 concern another party

and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 300 of the Amended Complaint and, therefore, denies the same.

301. On information and belief, products sold under the brand Beatit are manufactured by and/or imported for sale by Respondents Boltpower, Shenzhen Mediatek Tong, and Lianfatong**[Respondent Removed]**. See Ex. 44C, ¶¶ 21-23.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 301 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 301 of the Amended Complaint and, therefore, denies the same.

302. The Beatit Accused Products are sold after importation into the United States. For example, receipts from Amazon.com showing the purchase of a Beatit B10, B10 Pro (800A), B7 (1200A), BP101 (2200A), D11 (800A), and G18 (200A) at an address in the United States is attached as Ex. 122.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 122, which on its face includes a receipt. The allegations in ¶ 302 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 302 of the Amended Complaint and, therefore, denies the same.

303. The packaging of the Beatit Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 21-22; Ex. 122.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Exs. 44C and 122. The allegations in ¶ 303 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 303 of the Amended Complaint and, therefore, denies the same.

6. Boltpower

304. On information and belief, model numbers A7P, D28, D29, G33A, and N02 (collectively, the "Boltpower Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Boltpower. See Ex. 44C, ¶¶ 24-26.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 304 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 304 of the Amended Complaint and, therefore, denies the same.

305. On information and belief, products sold under the brand Boltpower are manufactured by and/or imported for sale by Respondent Boltpower and Tii Trading. See Ex. 44C, ¶¶ 24-26.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 305 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 305 of the Amended Complaint and, therefore, denies the same.

306. The Boltpower Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com and eBay.com showing the purchase of a Boltpower A7P, D28, D29, G33A, and N02 at an address in the United States is attached as Ex. 55.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 55, which on its face includes a receipt. The allegations in ¶ 306 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 306 of the Amended Complaint and, therefore, denies the same.

307. The packaging of the Boltpower Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 24-25 (citing Ex. 55).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 307 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 307 of the Amended Complaint and, therefore, denies the same.

7. DB Power/Valuelink

308. On information and belief, model numbers DJS50 (800A/18000mAh), DJS80, G15, G16 (2000A/20800mAh), A09, DJS40, DJS50, DJS60, G09D, and N01(collectively, the "DB Power Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name DB Power. See Ex. 44C, ¶¶ 31-32.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 308 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 308 of the Amended Complaint and, therefore, denies the same.

309. On information and belief, products sold under the brand DB Power are manufactured by and/or imported for sale by Respondents Boltpower and Shenzhen Valuelink. See Ex. 44C, ¶¶ 31-32.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 309 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 309 of the Amended Complaint and, therefore, denies the same.

310. The DB Power Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a DB Power DJS50 (800A/1800mAh) and G16 (2000A/20800mAh) at an address in the United States is attached as Ex. 58.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 58, which on its face includes a receipt. The allegations in ¶ 310 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 310 of the Amended Complaint and, therefore, denies the same.

311. The packaging of the DB Power Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 31 (citing Ex. 58).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 311 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 311 of the Amended Complaint and, therefore, denies the same.

8. DieHard

312. On information and belief, model numbers 43448 (8000mAH) and DH110 (400A) (collectively, the "DieHard Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name DieHard. See Ex. 44C, ¶¶ 33-34.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 312 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 312 of the Amended Complaint and, therefore, denies the same.

313. On information and belief, products sold under the brand Schumacher are manufactured by and/or imported for sale by Respondents Boltpower and Schumacher. See Ex. 44C, ¶¶ 33-34.

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RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 313 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 313 of the Amended Complaint and, therefore, denies the same.

314. The DieHard Accused Products are sold after importation into the United States. For example, receipts from Amazon.com and menards.com showing the purchase of a Die Hard DH110 and 43448 at an address in the United States are attached as Ex. 59. On information and belief, the DieHard Accused Products are also sold by Walmart. See, e.g., https://www.walmart.com/ip/Diehard-Jumpstart-400amp/126963604?wmlspartner=wlpa&selectedSellerId=5227

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 59, which on its face is an email. Walmart denies selling the DieHard Accused Products. Walmart admits that the link shows a DieHard Accused Product for sale by KSCOSupply through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 314 of the Amended Complaint and, therefore, denies the same.

315. The packaging of the DieHard Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 33 (citing Ex. 59).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the reminder of ¶ 315 of the Amended Complaint and, therefore, denies the same.

9. Duralast

316. On information and belief, model numbers DL-2000lI and DL-800L (collectively, the "Duralast Accused Products") are manufactured outside the United States and sold for

importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Duralast. See Ex. 44C, ¶¶ 35-36.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 316 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 316 of the Amended Complaint and, therefore, denies the same.

317. On information and belief, products sold under the brand Duralast are manufactured by and/or imported for sale by Respondents Boltpower, Schumacher, and Best Parts. See Ex. 44C, ¶¶ 21-23

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 317 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in ¶ 317 of the Amended Complaint and, therefore, denies the same.

318. The Duralast Accused Products are sold after importation into the United States. For example, a receipt from Autozone.com showing the purchase of a Duralast DL-800L at an address in the United States is attached as Ex. 60.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 60, which on its face includes an email. Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the reminder of ¶ 318 of the Amended Complaint and, therefore, denies the same.

319. The packaging of the Duralast Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 35 (citing Ex. 60).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart lacks sufficient knowledge or

information to form a belief as to the allegations in the reminder of ¶ 319 of the Amended Complaint and, therefore, denies the same.

10. EverStart

320. On information and belief, model number SL097 (collectively, the "EverStart Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name EverStart. See Ex. 44C, ¶¶ 39-40.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart admits that it imported into the United States and/or sold within the United states after importation certain Everstart Accused Products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 320 of the Amended Complaint and, therefore, denies the same.

321. On information and belief, products sold under the brand EverStart are manufactured by and/or imported for sale by Respondents Boltpower and Schumacher. See Ex. 44C, ¶¶ 39-40.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart admits that products sold under the brand Everstart are manufactured by and/or imported for sale by Schumacher. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 321 of the Amended Complaint and, therefore, denies the same.

322. The EverStart Accused Products are sold after importation into the United States. For example, a receipt from Walmart.com showing the purchase of an EverStart SL097 at an address in the United States is attached as Ex. 62.

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RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 62, which on its face includes an email. Walmart admits that it sold the Everstart Accused Product after importation into the United States.

323. The packaging of the EverStart Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 39 (citing Ex. 62).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart admits that Ex. 62 purports to show product packaging of the EverStart Accused Producs that indicates that product is "Made in China." Walmart lacks sufficient knowledge or information to form a belief as to the allegations in the reminder of ¶ 323 of the Amended Complaint and, therefore, denies the same.

11. Fconegy [Respondent Removed]

324. On information and belief, model numbers FC100 and FC200 (collectively, the "Fconegy Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Fconegy. See Ex. 44C, ¶¶ 41-42.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 324 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 324 of the Amended Complaint and, therefore, denies the same.

325. On information and belief, products sold under the brand Fconegy**[Respondent Removed]** are manufactured by and/or imported for sale by Respondents Boltpower and Fconegy. See Ex. 44C, ¶¶ 41-42; Ex. 31.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 325 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 325 of the Amended Complaint and, therefore, denies the same.

326. The Fconegy **[Respondent Removed]** Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Fconegy FC100 at an address in the United States is attached as Ex. 63.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 63, which on its face includes photos and a website page. The allegations in ¶ 326 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 326 of the Amended Complaint and, therefore, denies the same.

327. The packaging of the Fconegy**[Respondent Removed]** Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 41 (citing Ex. 63).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 327 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 327 of the Amended Complaint and, therefore, denies the same.

12. Flylinktech

328. On information and belief, model numbers CF100, CF200, CF300, CF400, and

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CF600 (collectively, the "Flylinktech Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Flylinktech. See Ex. 44C, ¶¶ 43-44.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 328 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 328 of the Amended Complaint and, therefore, denies the same.

329. On information and belief, products sold under the brand Flylinktech are manufactured by and/or imported for sale by Respondents Boltpower and Flylink Tech Company. See Ex. 44C, ¶¶ 43-44.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 329 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 329 of the Amended Complaint and, therefore, denies the same.

330. The Flylinktech Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Flylinktech CF600 at an address in the United States is attached as Ex. 64.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 64, which on its face includes a receipt. The allegations in ¶ 330 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 330 of the Amended Complaint and, therefore, denies the same.

331. The packaging of the Flylinktech Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 43 (citing Ex. 64).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 331 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 331 of the Amended Complaint and, therefore, denies the same.

13. Imazing

332. On information and belief, model numbers G26, G27, G29P, IM23, IM25, IM27/G26, IM29/G29, IM31, and J8 (collectively, the "Imazing Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Imazing. See Ex. 44C, ¶¶ 59-60.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 332 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 332 of the Amended Complaint and, therefore, denies the same.

333. On information and belief, products sold under the brand Imazing are manufactured by and/or imported for sale by Respondents Boltpower, Circus Link**[Respondent Removed]**, and Smart Well**[Respondent Removed]**. See Ex. 44C, ¶¶ 59-60.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 333 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 333 of the Amended Complaint and, therefore, denies the same.

334. The Imazing Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Imazing J8 and IM23, and IM31 at an address in the United States is attached as Ex. 124. The Imazing Accused Products are also sold by Respondent Walmart. See, e.g., https://www.walmart.com/ip/Imazing-Portable-Car-Lithium-Jump-Starter-2500A-Peak-21000mAh-Up-10L-Gas-Diesel-Engine-12V-Auto-Battery-Booster-Power-Pack-Jumper-Cables-QC-3-0-110V-/180839543

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 124, which on its face is an email. Walmart denies selling the Imazing Accused Products. Walmart admits that the link shows an Imazing Accused Product for sale by California Outlet through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 334 of the Amended Complaint and, therefore, denies the same.

335. The packaging of the Imazing Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 59; Ex. 124.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 335 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 335 of the Amended Complaint and, therefore, denies the same.

14. Jumtop

336. On information and belief, model numbers N13, D09, E18, and N12 (collectively, the "Jumtop Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Jumtop. See Ex. 44C, ¶¶ 63-64.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 336 concern another party

and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 336 of the Amended Complaint and, therefore, denies the same.

337. On information and belief, products sold under the brand Jumtop are manufactured by and/or imported for sale by Respondents Boltpower and Autolion. See Ex. 44C, ¶¶ 63-64.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 337 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 337 of the Amended Complaint and, therefore, denies the same.

338. The Jumtop Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Jumtop N13 at an address in the United States is attached as Ex. 72.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 72, which on its face includes a receipt. The allegations in ¶ 338 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 338 of the Amended Complaint and, therefore, denies the same.

339. The packaging of the Jumtop Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 63 (citing Ex. 72).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 339 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 339 of the Amended Complaint and, therefore, denies the same.

15. KTI (K-Tool International)

340. On information and belief, model numbers KTI-74391, KTI-74392, and KTI-74393 (collectively, the "K-Tool Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name K-Tool. See Ex. 44C, ¶¶ 65-66.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart admits that it sold within the United States certain K-Tool Accused Products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 340 of the Amended Complaint and, therefore, denies the same.

341. On information and belief, products sold under the brand K-Tool are manufactured by and/or imported for sale by Respondents K-Tool and Boltpower. See Ex. 44C, ¶¶ 65-66.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 341 of the Amended Complaint and, therefore, denies the same.

342. The K-Tool Accused Products are sold after importation into the United States. For example, a receipt from Walmart.com showing the purchase of a K-Tool KTI-74392 at an address in the United States is attached as Ex. 73. The K-Tool Accused Products are also sold by Respondent Advance Auto Parts. See, e.g., https://shop.advanceautoparts.com/p/k-toolinternational-jump-starter-power-s-kti74392/12009092-P?searchTerm=kti%20jump%20starter 343. The packaging of the K-Tool Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 65 (citing Ex. 73).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 73, which on its face includes an email. Walmart admits that it sold within the United States certain K-Tool Accused Products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 342 of the Amended Complaint and, therefore, denies the same.

343. The packaging of the K-Tool Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 65 (citing Ex. 73).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 343 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 343 of the Amended Complaint and, therefore, denies the same.

16. Lemsir

344. On information and belief, model numbers L6 (800A/10800mAh), V1 (2000A/21000mAh), V2 (1500A/15600mAh), V3 (2200A/21000mAh), and V8 (800A/12800mAh) (collectively, the "Lemsir Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Lemsir. See Ex. 44C, ¶¶ 67-68.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 344 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 344 of the Amended Complaint and, therefore, denies the same.

345. On information and belief, products sold under the brand Lemsir are manufactured by and/or imported for sale by Respondents Boltpower, Shenzhen Mediatek Tong, and Lianfatong**[Respondent Removed]**. See Ex. 44C, ¶¶ 67-68.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 345 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 345 of the Amended Complaint and, therefore, denies the same.

346. The Lemsir Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Lemsir V8 (800A/12800mAh) at an address in the United States is attached as Ex. 74.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 74, which on its face includes a receipt. The allegations in ¶ 346 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 346 of the Amended Complaint and, therefore, denies the same.

347. The packaging of the Lemsir Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 67 (citing Ex. 74).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 347 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 347 of the Amended Complaint and, therefore, denies the same.

17. Loftek

348. On information and belief, model numbers Y29 and G21 (collectively, the "Loftek Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Loftek. See Ex. 44C, ¶¶ 69-70.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 348 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 348 of the Amended Complaint and, therefore, denies the same.

349. On information and belief, products sold under the brand Loftek are manufactured by and/or imported for sale by Respondent Boltpower. See Ex. 44C, ¶¶ 69-70.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 349 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 349 of the Amended Complaint and, therefore, denies the same.

350. The Loftek Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Loftek G21 at an address in the United States is attached as Ex. 75.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 75, which on its face includes photos. The allegations in ¶ 350 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 350 of the Amended Complaint and, therefore, denies the same.

351. The packaging of the Loftek Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 69 (citing Ex. 75).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 351 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 351 of the Amended Complaint and, therefore, denies the same.

18. Matco Tools

352. On information and belief, model numbers MICROJUMP, MINIJUMP3, and VERSAPRO3 (collectively, the "Matco Accused Products") are manufactured outside the United

States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Matco. See Ex. 44C, ¶¶ 71-73.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 352 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 352 of the Amended Complaint and, therefore, denies the same.

353. On information and belief, products sold under the brand Matco are manufactured by and/or imported for sale by Respondents Matco, Boltpower, Carku, and Horizon Tool. See Ex. 44C, ¶¶ 71-73.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 353 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 353 of the Amended Complaint and, therefore, denies the same.

354. The Matco Accused Products are sold after importation into the United States. For example, receipts from matcotools.com showing the purchase of a Matco MICROJUMP and VERSAPRO3 at an address in the United States is attached as Ex. 76.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 76, which on its face includes emails. The allegations in ¶ 354 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 354 of the Amended Complaint and, therefore, denies the same.

355. The packaging of the Matco Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 71-72 (citing Ex. 76).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 355 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 355 of the Amended Complaint and, therefore, denies the same.

19. Nexpow

356. On information and belief, model numbers G7 (2000A) and G7 (1500A) (collectively, the "Nexpow Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Nexpow. See Ex. 44C, ¶¶ 78-79.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 356 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 356 of the Amended Complaint and, therefore, denies the same.

357. On information and belief, products sold under the brand Nexpow are manufactured by and/or imported for sale by Respondents Boltpower and Hangchebao. See Ex. 44C, ¶¶ 78-79.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 357 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 357 of the Amended Complaint and, therefore, denies the same.

358. The Nexpow Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Nexpow G17 (1500A) at an address in the United States is attached as Ex. 79.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 79, which on its face includes a receipt. The allegations in ¶ 358 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 358 of the Amended Complaint and, therefore, denies the same.

359. The packaging of the Nexpow Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 78 (citing Ex. 79).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 359 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 359 of the Amended Complaint and, therefore, denies the same.

20. PowerCache

360. On information and belief, model numbers 39602 and 39603 (G19) (collectively, the "PowerCache Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name PowerCache. See Ex. 44C, ¶¶ 86-87.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 360 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 360 of the Amended Complaint and, therefore, denies the same.

361. On information and belief, products sold under the brand PowerCache are manufactured by and/or imported for sale by Respondents Boltpower and MonoPrice. See Ex. 44C, ¶¶ 86-87.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 361 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 361 of the Amended Complaint and, therefore, denies the same.

362. The PowerCache Accused Products are sold after importation into the United States. For example, a receipt from Monoprice.com showing the purchase of a PowerCache 39603 (G19) at an address in the United States is attached as Ex. 83.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 83, which on its face includes an email. The allegations in ¶ 362 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 362 of the Amended Complaint and, therefore, denies the same.

363. The packaging of the PowerCache Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 86-87 (citing Ex. 83).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 363 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 363 of the Amended Complaint and, therefore, denies the same.

21. Roav

364. On information and belief, model numbers Pro 1000A and Pro 800 (collectively, the "Roav Accused Products") are manufactured outside the United States and sold for importation

into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Roav. See Ex. 44C, ¶¶ 90-91.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 364 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 364 of the Amended Complaint and, therefore, denies the same.

365. On information and belief, products sold under the brand Roav are manufactured by and/or imported for sale by Respondents Boltpower and Anker Technology (UK). See Ex.85.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 85, which on its face includes photos, an email and online listings. The allegations in ¶ 365 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 365 of the Amended Complaint and, therefore, denies the same.

366. The Roav Accused Products are sold after importation into the United States. For example, a receipt from bestbuy.com showing the purchase of a Roav Pro 800 at an address in the United States is attached as Ex. 85. On information and belief, the Roav Accused Products are also sold by Respondents NAPA, Walmart and Best Buy. See, e.g.,

https://www.bestbuy.com/site/anker-roav-jump-starter-pro-black/6297939.p?skuId=6297939

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 85, which on its face includes an email. Walmart denies selling the Roav Accused products. Walmart admits that third party retailers may sell portable battery jump starters through Walmart's online marketplace at Walmart.com. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 366 of the Amended Complaint and, therefore, denies the same.

367. The packaging of the Roav Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 90 (citing Ex. 85).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 367 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 367 of the Amended Complaint and, therefore, denies the same.

22. Sanrock

368. On information and belief, model number G37 (the "Sanrock Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Sanrock. See Ex. 44C, ¶¶ 92-93.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 368 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 368 of the Amended Complaint and, therefore, denies the same.

369. On information and belief, products sold under the brand Sanrock are manufactured by and/or imported for sale by Respondents Boltpower and Shenzhen Li Feng Maoyiyouxiangognsi**[Respondent Removed]**. See Ex. 44C, ¶¶ 92-93.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 369 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a

belief as to the remaining allegations in ¶ 369 of the Amended Complaint and, therefore, denies the same.

370. The Sanrock Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Sanrock G37 at an address in the United States is attached as Ex. 86.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 86, which on its face includes a receipt. The allegations in ¶ 370 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 370 of the Amended Complaint and, therefore, denies the same.

371. The packaging of the Sanrock Accused Product indicates that the product is "Made in China." See Ex. 44C, ¶ 92 (citing Ex. 86).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 371 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 371 of the Amended Complaint and, therefore, denies the same.

23. Schumacher

372. On information and belief, model numbers SL1312 (600A), SL1314 (600A), SL1315 (800A), SL1316 (1000A), SL1317 (1000A), SL1327 (800A), SL 1396 (800A) (collectively, the "Schumacher Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Schumacher. See Ex. 44C, ¶¶ 94-98.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 372 concern another party and are not directed to Walmart. Walmart admits that Schumacher Accused Products are sold for

importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Schumacher. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 372 of the Amended Complaint and, therefore, denies the same.

373. On information and belief, products sold under the brand Schumacher are manufactured by and/or imported for sale by Respondents Boltpower, Schumacher, and Pep Boys**[Respondent Removed]**. See Ex. 44C, ¶¶ 94-98.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 373 concern another party and are not directed to Walmart. Walmart admits that products sold under the brand Schumacher are imported for sale by Respondent Schumacher. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 373 of the Amended Complaint and, therefore, denies the same.

374. The Schumacher Accused Products are sold after importation into the United States. For example, receipts from batterychargers.com, Walmart.com, Oreillyauto.com, and homedepot.com showing the purchase of a Schumacher SL 1312, SL1315, SL1316, and SL1396 at an address in the United States are attached as Ex. 87. On information and belief, the Schumacher Accused Products are also sold by Respondents AutoZone, Advance Auto, NAPA, and Lowe's. See, e.g., https://www.lowes.com/pd/Schumacher-Electric-1200-Amp-Car-Battery-Jump-Starter-with-Digital-Display/1000569111;

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 87, which on its face includes emails, photos and online listings. Walmart admits that Schumacher Accused Products are sold after importation into the United States. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in the reminder of ¶ 374 of the Amended Complaint and, therefore, denies the same.

375. The packaging of the Schumacher Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 97 (citing Ex. 87).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 373 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 373 of the Amended Complaint and, therefore, denies the same.

24. Tooliom

376. On information and belief, model number Epower-125 (2000A) (the "Tooliom Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Tooliom. See Ex. 44C, ¶¶ 108-109.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 376 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 376 of the Amended Complaint and, therefore, denies the same.

377. On information and belief, products sold under the brand Tooliom are manufactured by and/or imported for sale by Respondents Boltpower and Carku. See Ex. 44C, ¶¶ 108-109.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 377 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 377 of the Amended Complaint and, therefore, denies the same.

378. The Tooliom Accused Product is after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Tooliom Epower-125 (2000A) at an address in the United States is attached as Ex. 91.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 91, which on its face includes photos and online listings. The allegations in ¶ 378 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 378 of the Amended Complaint and, therefore, denies the same.

379. The packaging of the Tooliom Accused Product indicates that the product is "Made in China." See Ex. 44C, ¶ 108 (citing Ex. 91).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 379 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 379 of the Amended Complaint and, therefore, denies the same.

25. Topdon

380. On information and belief, model numbers VOLCANO1500 and VOLCANO2000 (collectively, the "Topdon Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Topdon. See Ex. 44C, ¶¶ 110-111.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 380 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 380 of the Amended Complaint and, therefore, denies the same.

381. On information and belief, products sold under the brand Topdon are manufactured by and/or imported for sale by Respondents Boltpower, Shenzhen Topdon, and Shenzhen Dingjiang Technology. See Ex. 44C, ¶¶ 110-111.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 381 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 381 of the Amended Complaint and, therefore, denies the same.

382. The Topdon Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Topdon VOLCANO2000 at an address in the United States is attached as Ex. 92.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 92, which on its face includes a receipt. The allegations in ¶ 382 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 382 of the Amended Complaint and, therefore, denies the same.

383. The packaging of the Topdon Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 110 (citing Ex. 92).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 383 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 383 of the Amended Complaint and, therefore, denies the same.

26. Topvision

384. On information and belief, model number G26 (the "Topvision Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Topvision. See Ex. 44C, ¶¶ 112-113.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 384 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 384 of the Amended Complaint and, therefore, denies the same.

385. On information and belief, products sold under the brand Topvision are manufactured by and/or imported for sale by Respondent Boltpower. See Ex. 44C, ¶¶ 112-113.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 385 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 385 of the Amended Complaint and, therefore, denies the same.

386. The Topvision Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Topvision G26 at an address in the United States is attached as Ex. 93.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 93, which on its face includes a receipt. The allegations in ¶ 386 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 386 of the Amended Complaint and, therefore, denies the same.

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387. The packaging of the Topvision Accused Product indicates that the products is "Made in China." See Ex. 44C, ¶ 112 (citing Ex. 93).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 387 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 387 of the Amended Complaint and, therefore, denies the same.

27. Trekpow

388. On information and belief, model numbers A18, G22, and TJ2500 (collectively, the "Trekpow Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Trekpow. See Ex. 44C, ¶¶ 116-117.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 388 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 388 of the Amended Complaint and, therefore, denies the same.

389. On information and belief, products sold under the brand Trekpow are manufactured by and/or imported for sale by Respondent Boltpower. See Ex. 44C, ¶¶ 116-117.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 389 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 389 of the Amended Complaint and, therefore, denies the same.

390. The Trekpow Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Trekpow G22 at an address in the United States is attached as Ex. 95.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 95, which on its face includes a receipt. The allegations in ¶ 390 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 390 of the Amended Complaint and, therefore, denies the same.

391. The packaging of the Trekpow Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 116.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 391 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 391 of the Amended Complaint and, therefore, denies the same.

28. Vavofo

392. On information and belief, model number G23P (the "Vavofo Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Vavofo. See Ex. 44C, ¶¶ 122-124.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 392 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 392 of the Amended Complaint and, therefore, denies the same.

393. On information and belief, products sold under the brand Vavofo are manufactured by and/or imported for sale by Respondent Boltpower. See Ex. 44C, ¶¶ 122-124.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 393 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 393 of the Amended Complaint and, therefore, denies the same.

394. On information and belief, the Vavofo Accused Product is sold after importation into the United States. For example, a listing from Amazon.com indicating the Vavofo Accused Product is manufactured by Respondent Boltpower is attached as Ex. 98.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 98, which on its face includes a listing. The allegations in ¶ 394 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 394 of the Amended Complaint and, therefore, denies the same.

395. The Vavofo Accused Product also indicates that the product is "Made in China." See Ex. 44C, ¶ 122 (citing Ex. 98).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 395 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 395 of the Amended Complaint and, therefore, denies the same.

29. Vekkia

396. On information and belief, model numbers THOR-1000 and THOR-3000(collectively, the "Vekkia Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Vekkia. See Ex. 44C, ¶¶ 125-126.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 396 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 396 of the Amended Complaint and, therefore, denies the same.

397. On information and belief, products sold under the brand Vekkia are manufactured by and/or imported for sale by Respondents Boltpower and Chic Electrics**[Respondent Removed]**. See Ex. 44C, ¶¶ 124126.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 397 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 397 of the Amended Complaint and, therefore, denies the same.

398. The Vekkia Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Vekkia THOR-1000 at an address in the United States is attached as Ex. 128.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 128, which on its face includes a receipt. The allegations in ¶ 398 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 398 of the Amended Complaint and, therefore, denies the same.

399. The packaging of the Vekkia Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 125; Ex. 128.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 399 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 399 of the Amended Complaint and, therefore, denies the same.

30. Yaber

400. On information and belief, model numbers YR100, YR200, YR 600, YR500, YR700, and YR400 (collectively, the "Yaber Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Yaber. See Ex. 44C, ¶¶ 134-135.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 400 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 400 of the Amended Complaint and, therefore, denies the same.

401. On information and belief, products sold under the brand Yaber are manufactured by and/or imported for sale by Respondents Boltpower and ThiEye Technologies. See Ex. 44C, ¶¶ 134-135.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 401 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 401 of the Amended Complaint and, therefore, denies the same.

402. The Yaber Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Yaber YR400 at an address in the United States is attached as Ex. 103.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 103, which on its face includes a receipt. The allegations in ¶ 402 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 402 of the Amended Complaint and, therefore, denies the same.

403. The packaging of the Yaber Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 134 (citing Ex. 103).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 403 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 403 of the Amended Complaint and, therefore, denies the same.

C. Smartech Brands

1. Smartech

404. On information and belief, model numbers JS-10000, JS-15000, JS-15000N, JS6000, JS-8000, JS-8000N, and TECH-5000P (collectively, the "Smartech Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Smartech. See Ex. 44C, ¶¶ 99-100.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 404 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a

belief as to the remaining allegations in ¶ 404 of the Amended Complaint and, therefore, denies the same.

405. On information and belief, products sold under the brand Smartech are manufactured by and/or imported for sale by Respondent Smartech. See Ex. 44C, ¶¶ 99-100.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 405 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 405 of the Amended Complaint and, therefore, denies the same.

406. The Smartech Accused Products are sold after importation into the United States. For example, a receipt from smartech.com showing the purchase of a Smartech JS-10000, JS15000, JS-15000N, JS-8000N, and TECH-5000P at an address in the United States is attached as Ex. 88. The Smartech Accused Products are also sold by Respondent Walmart. See, e.g., https://www.walmart.com/ip/Smartech-JS-15000N-15000-mAh-Lithium-Powered-VehicleJump-Starter-and-Power-Bank-Starter-and-Power-Bank/286772303

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 88, which on its face is an email. Walmart denies selling the Smartech Accused Products. Walmart admits that the link shows a Smartech Accused Product for sale by iworks Performance through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 406 of the Amended Complaint and, therefore, denies the same.

407. The packaging of the Smartech Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 99 (citing Ex. 88).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 407 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 407 of the Amended Complaint and, therefore, denies the same.

D. Weego Brands

1. Weego

408. On information and belief, model numbers 22, 44.1, 66.2, 154, 22s (collectively, the "Weego Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Weego. See Ex. 44C, ¶¶ 127-128.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 408 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 408 of the Amended Complaint and, therefore, denies the same.

409. On information and belief, products sold under the brand Weego are manufactured by and/or imported for sale by Respondents Paris Corporation and Carku. See Ex. 44C, ¶¶ 127128.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 409 of the Amended Complaint and, therefore, denies the same.

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410. The Weego Accused Products are sold after importation into the United States. For example, a receipt from myweego.com showing the purchase of a Weego 22s at an address in the United States is attached as Ex. 101. The Weego Accused Products are also sold by Respondent Walmart. See, e.g., https://www.walmart.com/ip/Weego-22s-Jump-Starter-1700-Peak-300-Cranking-Amps-Simple-and-Safe-Lithium-Ion-Water-Resistant-USA-Designed-andEngineered/337164284

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 101, which on its face includes an email. Walmart admits that Weego Accused Products are sold by Walmart after importation into the United States. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 410 of the Amended Complaint and, therefore, denies the same.

411. The packaging of the Weego Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 127 (citing Ex. 101).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 411 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 411 of the Amended Complaint and, therefore, denies the same.

E. Winplus Brands

1. Type S

412. On information and belief, model numbers AC56388-BLK, AC56789-AM, AC56794-1 (collectively, the "Type S Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Type S. See Ex. 44C, ¶¶ 118-119.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 412 concern another party

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and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 412 of the Amended Complaint and, therefore, denies the same.

413. On information and belief, products sold under the brand Type S are manufactured by and/or imported for sale by Respondents Shenzhen Winplus**[Respondent Removed]** and Winplus North America. See Ex. 44C, ¶¶ 118-119.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 413 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 413 of the Amended Complaint and, therefore, denies the same.

414. The Type S Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Type S AC56388-BLK at an address in the United States is attached as Ex. 96. The Type S Accused Products are also available from Respondent Walmart. See, e.g., https://www.walmart.com/ip/Type-S-Lithium-Jump-Starter- Portable-Power-Bank-w-Built-in-Wireless-Charging/571679308

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 96, which on its face is an email. Walmart denies selling Type S Accused Products. Walmart admits that the link shows a Type S Accused Product for sale by Big Deal GA through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 414 of the Amended Complaint and, therefore, denies the same.

415. The packaging of the Type S Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 118 (citing Ex. 96).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 415 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 415 of the Amended Complaint and, therefore, denies the same.

2. Winplus

416. On information and belief, model numbers AC530171-1, AC55717-1, AC559296/1, AC55929-60, (collectively, the "Winplus Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Winplus. See Ex. 44C, ¶¶ 129-130.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 416 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 416 of the Amended Complaint and, therefore, denies the same.

417. On information and belief, products sold under the brand Winplus are manufactured by and/or imported for sale by Respondents Shenzhen Winplus**[Respondent Removed]** and Winplus North America. See Ex. 44C, ¶¶ 129-130.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 417 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 417 of the Amended Complaint and, therefore, denies the same.

418. The Winplus Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Winplus AC55717-1 at an address in the United States is attached as Ex. 100. On information and belief, the Winplus Accused Products are also sold by Respondents Walmart, Pep Boys**[Respondent Removed]**, Advanced Auto, and AutoZone. See http://winplus.com/usa/support/retail-locations/

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 100, which on its face includes photos and online listings. Certain allegations in ¶ 418 concern another party and are not directed to Walmart. Walmart denies selling Winplus Accused Products. Walmart admits that third party retailers may sell products through Walmart's online marketplace at Walmart.com. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 418 of the Amended Complaint and, therefore, denies the same.

419. The packaging of the Winplus Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 129 (citing Ex. 100).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 419 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 419 of the Amended Complaint and, therefore, denies the same.

F. Great Neck Brands

1. OEM Tools

420. On information and belief, model numbers 24474 (8000mAh), 24475 (12000mAh), and 24476 (18000mAh) (collectively, the "OEM Tools Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name OEM Tools. See Ex. 44C, ¶¶ 80-81.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 420 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 420 of the Amended Complaint and, therefore, denies the same.

421. On information and belief, products sold under the brand OEM Tools are manufactured by and/or imported for sale by Respondent Great Neck. See Ex. 44C, ¶¶ 80-81.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 421 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 421 of the Amended Complaint and, therefore, denies the same.

422. The OEM Tools Accused Products are sold after importation into the United States. For example, a receipt from Autozone.com showing the purchase of a OEM Tools 24474 (8000mAh) at an address in the United States is attached as Ex. 80.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 80, which on its face includes a receipt. The allegations in ¶ 422 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 422 of the Amended Complaint and, therefore, denies the same.

423. The packaging of the OEM Tools Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 80 (citing Ex. 80).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 423 concern another party

and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 423 of the Amended Complaint and, therefore, denies the same.

G. ThiEye Brands

1. Buture

424. On information and belief, model numbers BR300 and BR500 (collectively, the "Buture Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Buture. See Ex. 44C, ¶¶ 27-28.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 424 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 424 of the Amended Complaint and, therefore, denies the same.

425. On information and belief, products sold under the brand Buture are manufactured by and/or imported for sale by Respondent ThiEye Technologies. See Ex. 44C, ¶¶ 27-28.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 425 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 425 of the Amended Complaint and, therefore, denies the same.

426. The Buture Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Buture BR500 at an address in the United States is attached as Ex. 56.

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RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 56, which on its face includes a receipt. The allegations in ¶ 426 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 426 of the Amended Complaint and, therefore, denies the same.

427. The packaging of the Buture Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 27 (citing Ex. 56).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 427 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 427 of the Amended Complaint and, therefore, denies the same.

2. Fnnemge

428. On information and belief, model number Q9C (the "Fnnemge Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Fnnemge. See Ex. 44C, ¶¶ 45-46.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 428 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 428 of the Amended Complaint and, therefore, denies the same.

429. On information and belief, products sold under the brand Fnnemge are manufactured by and/or imported for sale by Respondents ThiEye and Hangchebao. See Ex. 44C, ¶¶ 45-46.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 429 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 429 of the Amended Complaint and, therefore, denies the same.

430. The Fnnemge Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Fnnemge Q9C at an address in the United States is attached as Ex. 123.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 123, which on its face includes a receipt. The allegations in ¶ 430 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 430 of the Amended Complaint and, therefore, denies the same.

431. The packaging of the Fnnemge Accused Product indicates that the product is "Made in China." See Ex. 44C, ¶¶ 45; Ex. 123.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 431 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 431 of the Amended Complaint and, therefore, denies the same.

3. Utrai

432. On information and belief, model number Jstar One (the "Utrai Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Utrai. See Ex. 44C, ¶¶ 120-121.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 432 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 432 of the Amended Complaint and, therefore, denies the same.

433. On information and belief, products sold under the brand Utrai are manufactured by and/or imported for sale by Respondent ThiEye Technologies. See Ex. 44C, ¶¶ 120-121.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 433 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 433 of the Amended Complaint and, therefore, denies the same.

434. The Utrai Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Utrai Jstar One at an address in the United States is attached as Ex. 127.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 127, which on its face includes photos, online listings and a trademark registration. The allegations in ¶ 434 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 434 of the Amended Complaint and, therefore, denies the same.

435. The packaging of the Utrai Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 120; Ex. 127.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 435 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 435 of the Amended Complaint and, therefore, denies the same.

H. Energen & Performance Tool Brands

1. Energen

436. On information and belief, model numbers AL12 and AL6 (collectively, the "Energen Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Energen. See Ex. 44C, ¶¶ 37-38.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 436 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 436 of the Amended Complaint and, therefore, denies the same.

437. On information and belief, products sold under the brand Energen are manufactured by and/or imported for sale by Respondent Energen. See Ex. 44C, ¶¶ 37-38.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 437 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 437 of the Amended Complaint and, therefore, denies the same.

438. The Energen Accused Products are sold after importation into the United States. For example, a receipt from myenergen.com showing the purchase of an Energen AL12 at an address in the United States is attached as Ex. 61. The Energen Accused Products are also sold by Respondents Best Buy and Walmart. See https://myenergen.com/resellers/

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 61, which on its face includes an email. Certain allegations in ¶ 438 concern another party and are not directed to Walmart. Walmart denies selling Energen Accused Products. Walmart admits that Energen sells Energen Accused Products through the Walmart.com online marketplace, where third-party retailers can sell products. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 438 of the Amended Complaint and, therefore, denies the same.

439. The packaging of the Energen Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶ 37 (citing Ex. 61).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 439 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 439 of the Amended Complaint and, therefore, denies the same.

2. Performance Tool

440. On information and belief, model number W16750 (collectively, the "Performance Tool Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Performance Tool. See Ex. 44C, ¶¶ 82-83.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart admits that Performance Tool

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Accused Products are sold within the United States after importation under the brand name Performanc Tool. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 440 of the Amended Complaint and, therefore, denies the same.

441. On information and belief, products sold under the brand Performance Tool are manufactured by and/or imported for sale by Respondent Wilmar Corporation **[Respondent Removed]** and Chao Fung Trading Co.**[Respondent Removed]**. See Ex. 44C, ¶¶ 82-83.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 441 of the Amended Complaint and, therefore, denies the same.

442. The Performance Tool Accused Products are sold after importation into the United States. For example, a receipt from carid.com showing the purchase of a Performance Tool W16750 at an address in the United States is attached as Ex. 81. The Performance Tool Accused Products are also sold by RespondentWalmart. See, e.g., https://www.walmart.com/ip/Performance-Tool-W1665-900-amp-Jump-StarterInflator/55558632

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 81, which on its face includes an email. Certain allegations in ¶ 442 concern another party and are not directed to Walmart. Walmart admits that it sold Performance Tool Accused Products after importation into the United States. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 442 of the Amended Complaint and, therefore, denies the same.

443. The packaging of the Performance Tool Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 82-83 (citing Ex. 81).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 443 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 443 of the Amended Complaint and, therefore, denies the same.

I. Halo Brands

1. HALO

444. On information and belief, model numbers Bolt 44000, Bolt 57720, Bolt 58830, Bolt Flashlight, and Bolt Wireless (collectively, the "Halo Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Halo. See Ex. 44C, ¶¶ 54-55.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 444 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 444 of the Amended Complaint and, therefore, denies the same.

445. On information and belief, products sold under the brand Halo are manufactured by and/or imported for sale by Respondents Carku, ZhongKang**[Respondent Removed]**, and Halo2Cloud. See Ex. 44C, ¶¶ 54-55.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 445 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 445 of the Amended Complaint and, therefore, denies the same.

446. The Halo Accused Products are sold after importation into the United States. For example, a receipt from Zagg.com showing the purchase of a Halo Bolt 44000 at an address in the United States is attached as Ex. 69.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 69, which on its face includes an email. The allegations in ¶ 446 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 446 of the Amended Complaint and, therefore, denies the same.

447. The packaging of the Halo Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 54 (citing Ex. 69).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 447 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 447 of the Amended Complaint and, therefore, denies the same.

J. Clore Brands

1. Jump-N-Carry

448. On information and belief, model numbers JNC325 and JNC345 (collectively, the "Jump-N-Carry Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Jump-N-Carry. See Ex. 44C, ¶¶ 61-62.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 448 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 448 of the Amended Complaint and, therefore, denies the same.

449. On information and belief, products sold under the brand Jump-N-Carry are manufactured by and/or imported for sale by Respondent Clore Automotive. See Ex. 44C, ¶¶ 61-62.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 449 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 449 of the Amended Complaint and, therefore, denies the same.

450. The Jump-N-Carry Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Jump-N-Carry JNC345 at an address in the United States is attached as Ex. 107.

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 107, which on its face includes a receipt. The allegations in ¶ 450 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 450 of the Amended Complaint and, therefore, denies the same.

451. The packaging of the Jump-N-Carry Accused Products indicates that the products are "Made in China." See Ex. 44C, ¶¶ 61 (citing Ex. 107).

RESPONSE: Walmart admits that the Amended Complaint is accompanied by Ex. 44C, which on its face a declaration of Anne E. Hurst. The allegations in ¶ 451 concern another party and are not directed to Walmart. Walmart lacks sufficient knowledge or information to form a belief as to the remaining allegations in ¶ 451 of the Amended Complaint and, therefore, denies the same.

VIII. HARMONIZED TARIFF SCHEDULE ITEM NUMBERS

452. The Accused Products are classified under at least the following subheadings of the Harmonized Tariff Schedule of the United States: 8504.40 (static converters) 8506.50 (lithium batteries); 8507.10, 8507.60 (lithium-ion electric storage batteries); 8511.40, 8511.50 (starter motors and generators), 8516.60, 8516.71 (ovens, coffee or tea makers); 8539.50.00 (LED lamps). These classifications are exemplary in nature and not intended to restrict the scope of any exclusion order or other remedy ordered by the Commission.

RESPONSE: Walmart denies the statements and allegations contained in ¶ 452 of the Amended Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining factual allegations in ¶ 452 of the Amended Complaint and, therefore, denies the same.

IX. DOMESTIC INDUSTRY

453. As required by 19 U.S.C. § 1337(a)(2), a domestic industry, as defined by 19 U.S.C. § 1337(a)(3), exists in the United States with respect to the Asserted Patents. Since its founding in 1914 with the development of battery corrosion preventative products in Cleveland, Ohio, where NOCO remains headquartered to this day, NOCO continues to research, develop, manufacture, and sell innovative battery-related products.

RESPONSE: Walmart denies the statements and allegations contained in ¶ 453 of the Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining factual allegations in ¶ 453 of the Complaint and, therefore, denies the same.

A. Technical Prong

454. NOCO has, and continues to make, significant and substantial investments in plant and equipment, labor and capital, and engineering and research and development with respect to the products that practice one or more claims of the Asserted Patents ("NOCO Domestic Industry Products"), including all six of the NOCO Boost® jump starter models. The NOCO Boost® jump starters practice at least the following claims of the Asserted Patents shown in Table 4:

Asserted Patent	Exemplary DI Claim(s)	Exemplary DI Product
9,007,015	1	GB40
10,604,024	1, 29, 30	GB40

Table 4. Asserted Patents Practiced by Domestic Industry Products

RESPONSE: Walmart denies the statements and allegations contained in ¶ 454 of the Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining factual allegations in ¶ 454 of the Amended Complaint and, therefore, denies the same.

455. The NOCO Domestic Industry Products all practice the claims of the Asserted Patents in the same manner. Claim charts demonstrating how the representative NOCO Domestic Industry Product practices these claims are attached as Confidential Exhibit 10C. This claim chart provides a basis for the domestic industry relating to both the '015 and '024 Patents.

RESPONSE: Walmart admits Confidential Exhibit 10C, on its face, purports to be a copy of claim charts. Walmart states that the allegations contained in ¶ 455 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Walmart denies the statements and allegations contained in ¶ 455 of the Amended Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining remaining allegations in ¶ 455 of the Amended Complaint and, therefore, denies the same.

456. The Asserted Trademarks appear in NOCO's website marketing materials and product information. See Ex. 8 and 104. This use of the Asserted Trademarks in commerce provides a basis for the domestic industry relating to both the '656 and '749 Trademarks.

RESPONSE: Walmart admits Confidential Exhibit 10C, on its face, purports to be a copy of claim charts. Walmart states that the allegations contained in ¶ 456 of the Amended

Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 456 of the Amended Complaint and, therefore, denies the same.

B. Economic Prong

457. NOCO conducts all of its engineering, research and development, product design, testing, and sample construction in the United States. As such, NOCO has made significant investments in plant and equipment, labor and capital, and substantial investments in engineering, research and development with respect to the Asserted Patents and Asserted Trademarks in the United States, satisfying the requirements of 19 U.S.C. § 337(a)(3)(A)-(C). NOCO has invested, and continued to invest, in the United States millions of dollars per year in activities related to the design, engineering, development, testing, marketing, distribution, customer service, and warranty fulfillment relating to the NOCO Domestic Industry Products.

RESPONSE: Walmart states that the allegations contained in ¶ 457 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Walmart denies the statements and allegations contained in ¶ 457 of the Amended Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 457 of the Amended Complaint and, therefore, denies the same.

458. NOCO's headquarters in Glenwillow, Ohio houses NOCO's sales and marketing department, and serves as the main distribution center for North America. NOCO conducts product testing, compliance activities, and other technical support the Glenwillow facility. Accompanying this Complaint as Confidential Exhibit 105C is the Declaration of Jeffery Weiner, which provides information about NOCO's investments in connection with the NOCO Domestic Industry Products. Ex. 105C (DI Dec.) at ¶¶16-35.

RESPONSE: Walmart admits Confidential Exhibit 105C, on its face, purports to be a copy of Declaration of Jeffery Weiner. Subject to the foregoing, Walmart lacks knowledge or

information sufficient to form a belief as to the remaining allegations in ¶ 458 of the Amended Complaint and, therefore, denies the same.

459. NOCO conducts its design, research, and development activities at its facility in Peoria, Arizona. Id. at ¶13. NOCO conducts additional product design activities at its facility in Tempe, Arizona. Id. at ¶ 14.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 459 of the Amended Complaint and, therefore, denies the same.

460. NOCO has also employed significant labor and capital with respect to the NOCO Domestic Industry Products. See Ex. 105C at ¶¶ 22-30.

RESPONSE: Walmart admits Exhibit 105C, on its face, purports to include NOCO's labor and capital employment. Walmart states that the allegations contained in ¶ 460 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 460 of the Amended Complaint and, therefore, denies the same.

461. The first NOCO Boost® jump starter was introduced in 2014, and NOCO has continually improved the product since then. Notably, NOCO's spending on research and development has increased in each of the past three years. Ex. 105C at ¶33. From 2017 to the present, NOCO has paid several million dollars in payroll to engineering and technical personnel in the United States, whose employment pertains to the engineering and technical aspects of the Boost® product line, including the patented subject matter. Id. at ¶34. NOCO has also invested in customer-specific design projects.

RESPONSE: Walmart admits Exhibit 105C, on its face, purports to include NOCO's spending on research and development. Walmart denies the statements and allegations contained in ¶ 461 of the Amended Complaint to the extent that they contain opinions and legal arguments

rather than factual assertions and, therefore, require no response. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 461 of the Amended Complaint and, therefore, denies the same.

462. Since 2016 the majority of NOCO's revenue has been derived from sales of its Boost® line of jump starters. Id. at ¶15.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 462 of the Amended Complaint and, therefore, denies the same.

X. RELATED LITIGATION

463. As of the date of the filing of this complaint, there have been 20 lawsuits involving the '015 Patent in U.S. District Courts. A chart outlining this litigation and its status is included as Ex. 108. The '015 Patent is also involved in two pending Inter Partes Review proceedings pending before the Patent Trial and Appeal Board ("PTAB") of the United States Patent and Trademark Office. One was filed by Carku (IPR2020-00944) on May 14, 2020 and the PTAB has instituted review. The other was filed by Shenzhen Mediatek Tong Technology Co, Ltd. on July 29, 2020; NOCO filed its preliminary response to the petition on December 16, 2020 and the PTAB's decision on whether or not to institute review is expected by March 2021.

RESPONSE: Walmart admits Exhibit 108, on its face, purports to be a copy of a chart outlining litigations. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 463 of the Amended Complaint and, therefore, denies the same.

464. There has been no litigation involving the '024 Patent.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 464 of the Amended Complaint and, therefore, denies the same.

465. As of the date of filing the complaint, there have been thirteen district court actions involving the Asserted Trademarks. See Ex. 109. There have been no proceedings before the PTAB.

RESPONSE: Walmart admits Exhibit 109, on its face, purports to include district court actions involving the Asserted Trademarks. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 465 of the Amended Complaint and, therefore, denies the same.

466. Other than the litigation specified above, to Complainant's knowledge, the Asserted Patents and Asserted Trademarks are not and have not been the subject of any current or prior litigation.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 466 of the Amended Complaint and, therefore, denies the same.

XI. GEO

467. A general exclusion order is needed to prevent the circumvention of an order limited to the Proposed Respondents due to the widespread pattern of infringement, as well as the difficulty in identifying the source of the Accused Products. 19 U.S.C. § 1337 (d)(2). This is evidenced by the fact that Accused Products continue to enter the market despite NOCO's aggressive ongoing enforcement measures.

RESPONSE: Walmart states that the allegations contained in ¶ 467 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Walmart denies the statements and allegations contained in ¶ 467 of the Amended Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response.

468. Starting in 2014, NOCO began noticing the appearance of the Accused Products in the marketplace. NOCO responded by filing lawsuits against five foreign entities that were offering infringing jump starters on Amazon.com. Since then, NOCO has filed sixteen additional

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lawsuits, including suits in Canada, the United Kingdom and Germany. As a result of these efforts, NOCO secured a permanent injunction against two of the foreign entities barring them from selling or offering to sell jump starters that infringe NOCO's '015 patent and entered into a settlement agreement with a third foreign entity providing a substantial payment for past damages and a license for future sales. The remaining suits are pending.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 468 of the Amended Complaint and, therefore, denies the same.

469. Despite these efforts, and successful litigation outcomes, NOCO continues to notice new market entrants selling jump starters with the same features as the NOCO Boost® products. NOCO vigilantly monitors Amazon.com listings and works with Amazon to remove listings for infringing products. NOCO estimates that in the past two years, it has had to file hundreds of takedown notices with Amazon. NOCO also filed a lawsuit against numerous defendants, including named Respondents Shenzhen Valuelink, Aukey**[Respondent Removed]**, Shenzhen Mediatek, Gooloo, Guangzhou Unique Electronics**[Respondent Removed]**, alleging that these companies, inter alia, manipulated Amazon.com algorithms, which determine the product that will receive the "Amazon's Choice" Badge, such that defendants' products would receive the "Amazon's Choice" Badge instead of NOCO. See The NOCO Company v. Shenzhen Valuelink E-Commerce Co., Ltd., et al., N.D. Ohio, No. 1:20-cv-00049-SO, (Jan. 9, 2020).

RESPONSE: Walmart states that the allegations contained in ¶ 469 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 469 of the Amended Complaint and, therefore, denies the same.

470. In pursuit of these enforcement efforts, NOCO has expended significant employee time in addition to legal fees. Through continuous monitoring, NOCO employees identify infringing products or abuse (e.g., manipulation of the Amazon platform) weekly, sometimes daily.

RESPONSE: Walmart states that the allegations contained in ¶ 470 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Subject to the foregoing, Walmart lacks knowledge or

information sufficient to form a belief as to the remaining allegations in ¶ 470 of the Amended Complaint and, therefore, denies the same.

471. In addition to products infringing the Asserted Patents, NOCO regularly sees 1) unauthorized use of NOCO trademarks; 2) unauthorized use of NOCO copyrighted images - in whole, or in part, meaning an entity has slightly modified a NOCO image to use with their product; 3) copying NOCO content with a similar look and stylization. For example, the FCOEnegy website (Ex. 31) uses a photo copied from the NOCO website that includes NOCO-branded jumper cables:

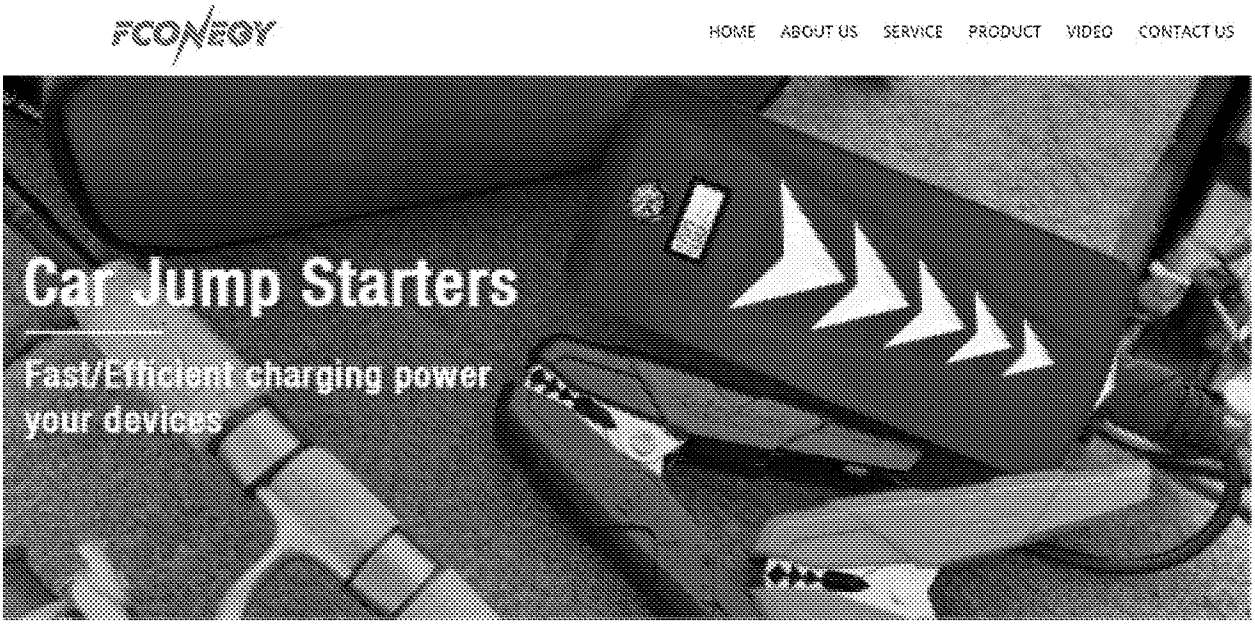


Fig. 6- Excerpt from FCOEngergy website, Ex. 31



Fig. 7- Photo from NOCO Website's HD Boost Battery Clamp Listing (Ex. 110)

RESPONSE: Walmart admits Exhibit 31, on its face, purports to be a snapshot of FCOEnegy website. Walmart admits Exhibit 110, on its face, purports to be a photo from NOCO Website's HD Boost Battery Clamp Listing. Walmart states that the allegations contained in ¶ 471 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Walmart denies the statements and allegations contained in ¶ 471 of the Amended Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response. Subject to the foregoing, Walmart lacks knowledge or information sufficient to form a belief as to the remaining allegations in ¶ 471 of the Amended Complaint and, therefore, denies the same.

472. Notably, NOCO has filed no less than 50 claims of infringement through Amazon Brand Registry for the Asserted Trademark ULTRASAFE.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 472 of the Amended Complaint and, therefore, denies the same.

473. In terms of abuse or manipulation of the Amazon marketplace, NOCO has identified the following types of activities by proposed Respondents or other sellers of the Accused Products: 1) manipulating Amazon organic search ranking; 2) depressing legitimate products organic search ranking; 3) fake positive and negative reviews; 4) false product return claims to force a product takedown; 5) altering competitive products' browse nodes; 6) manipulating the Amazon Choice badge; and 7) altering NOCO content.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 473 of the Amended Complaint and, therefore, denies the same.

474. Each instance of infringement or abuse is reported to NOCO's Global HQ, at which point it is either submitted to Amazon Brand Registry or becomes the subject of a lawsuit. For some types of infringement, NOCO has elected to stop using Brand Registry after finding that Amazon often simply modifies the listing with the infringing content; NOCO is now filing lawsuits in almost every instance. In 2020, NOCO enrolled in the Amazon SVS Program, at a cost of approximately $500,000 to help resolve these issues more efficiently. Registering with the SVS Program was critical as the number of infractions and instance of abuse were too high for the category manager assigned to NOCO to assist in resolution. The abuse by NOCO's competitors has become so prevalent that Amazon has placed the NOCO products into multiple exclusive protection programs.

RESPONSE: Walmart lacks knowledge or information sufficient to form a belief as to the allegations in ¶ 474 of the Amended Complaint and, therefore, denies the same.

XII. REQUESTED RELIEF

475. Proposed Respondents have infringed and will continue to infringe the Asserted Patents and Asserted Trademarks as specified in Section VI above unless the Commission prohibits the importation into and sale within the United States after importation of the Accused Products.

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RESPONSE: Walmart admits Section VI of the Amended Complaint, on its face, purports to specify the Asserted Patents and Asserted Trademarks. Walmart states that the allegations contained in ¶ 475 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Walmart denies the statements and allegations contained in ¶ 475 of the Amended Complaint to the extent that they contain opinions and legal arguments rather than factual assertions and, therefore, require no response.

476. Accordingly, NOCO respectfully requests that the United States International Trade Commission:

a) Institute an immediate investigation pursuant to Section 337(b)(1) of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, into Proposed Respondents' violations of Section 337 arising from the sale for importation into the United States, importation, and/or sale within the United States after importation of certain portable battery jump starters and components thereof that infringe the Asserted Patents and/or Asserted Trademarks;

b) Schedule and conduct a hearing, pursuant to 19 U.S.C. § 1337 (c), for purposes of receiving evidence and hearing arguments concerning whether Proposed Respondents have violated Section 337 and, following the hearing, determine that Proposed Respondents have violated Section 337;

c) Issue a permanent general exclusion order, pursuant to 19 U.S.C. § 1337(d)(1), excluding from entry into the United States certain portable battery jump starters and components thereof that are imported, sold for importation, or sold after importation that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks, including, without limitation, the specific Accused Products identified in this Complaint and the exhibits hereto; or, in the alternative, issue permanent limited exclusion orders specifically directed to each named Respondent and its subsidiaries, predecessors, affiliates, agents, successors, and assigns, excluding from entry into the United States certain portable battery jump starters and components that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks;

d) Issue permanent orders, pursuant to 19 U.S.C. § 1337(f), directing Proposed Respondents and any of their principals, stockholders, officers, directors, employees, agents, distributors, controlled (whether by stock ownership or otherwise) and majority-owned business entities, successors, and assigns to cease and desist from importing, selling, selling for importation, offering for sale, using, demonstrating, promoting, marketing, and/or advertising in the United States Respondents' portable battery jump starters and components thereof that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks, including, without limitation, the specific Accused Products identified in this Complaint and the exhibits hereto;

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e) Impose a bond on importation and sales of infringing products during the 60-day Presidential review period pursuant to 19 U.S.C. § 1337(j); and

f) Grant all such other and further relief as it deems appropriate under the law, based upon the facts complained of herein and as determined by the Investigation.

RESPONSE: Walmart states that the allegations contained in ¶ 476 of the Amended Complaint are conclusions of law as to which no response is necessary, but to the extent any response is required, denies the same. Walmart denies that it has engaged in any unlawful act as alleged by the Complainant.

RESPONSE TO THE NOTICE OF INVESTIGATION

Walmart admits that the Commission has instituted an Investigation as set forth in the Commission's Notice of Investigation dated March 17, 2021, and published in the Federal Register on March 24, 2021. Walmart denies that the importation into the United States, the sale for importation, or the sale within the United States after importation of "certain portable battery jump starters and components thereof" constitutes infringement of any claims of the Asserted Patents. Walmart states that the Complainant did not assert its Asserted Trademark against Walmart. Walmart further denies that there is a violation of Section 337 of the Tariff Act of 1930, as amended, by reason of the alleged infringement of any asserted claim of the Asserted Patents. Walmart further denies that there is a protectable domestic industry as required by subsection (a)(2) of Section 337.

WALMART'S STATEMENT UNDER 19 C.F.R. § 210.13(B)

Pursuant to Rule 210.13(b), Walmart provides the following information. By providing this information, Walmart intends only to supply data required by 19 C.F.R. § 210.13(b). Walmart specifically denies that any of the information or supplied data relates to or supports

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any allegations of infringement against Walmart or any violation of Section 337. Walmart understands that Complainant in its Amended Complaint accuses Walmart of infringement of one or more of claims of '015 patent and '024 patent.

1. Statistical data regarding the value of imports

Walmart estimates it has sold approximately 1.7 million units of the Accused Products in the United States since January 1, 2019 for about $101 million in sales. The Harmonized Tariff Schedule Item Number(s) used for the Accused Products in which Walmart is the importer of records is believed to be: 8507-60-00-20 and 8507-10-00-30. Walmart has no knowledge of the Harmonized Tariff Schedule Item Number(s) for the Accused Products Walmart has not imported.

2. Information regarding the name and address of suppliers of Walmart's imports:

Schumacher Electric Corp.
801 E. Business Center Drive
Mount Prospect, Illinois 60056

Baccus Global LLC
621 NW 53rd Street
Boca Raton, Florida 33487

3. Information regarding Walmart's manufacturing capacity

Walmart has no capacity to manufacture the Accused Products.

4. Information regarding the relative significance of United States sales:

The U.S. market is a significant market.

REQUEST FOR RELIEF

WHEREFORE, Respondent respectfully requests that the Commission:

1. Find that no violation of Section 337 of the Tariff Act of 1930, as amended, exists by reason of importation, sale for importations or sale after importation by Walmart of certain portable battery jump starters and components thereof as described in the Amended Complaint and Notice of Investigation;

2. Deny Complainant's request for a general exclusion order, a limited exclusion order, cease and desist orders, and bond directed to products manufactured for Walmart, its subsidiaries, affiliates, related companies and agents;

3. Determine that Walmart has not infringed any valid claims of the Asserted Patents;

4. Determine that Complainant has failed to meet the domestic industry requirement; and

5. Grant Walmart such other and further relief that the Commission determines is appropriate based upon the facts determined by the investigator and the authority of the Commission.

CONCLUSION

Walmart respectfully requests that the Commission determine and direct that: (i) Walmart has not violated 19 U.S.C. § 1337; (ii) Walmart has not infringed any valid claims of the Asserted Patents; (iii) Walmart has not committed any unfair acts; and (iv) Walmart is entitled to such other and further relief as the Commission deems just and proper under the law.

Respectfully submitted,

Dated: April 22, 2021

/s/Lyle B. Vander Schaaf

Lyle B. Vander Schaaf
Fei Hu

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Counsel for Respondents Walmart Inc.

CONTAINS CONFIDENTIAL BUSINESS INFORMATION SUBJECT TO PROTECTIVE ORDER

VERIFICATION OF RESPONSE TO THE COMPLAINT

I, Kenneth Collins, declare, in accordance with 19 C.F.R. §§ 210.4 and 210.13, under penalty of perjury under the laws of the United States of America, that the following statements are true:

1. I am Merchandising Director, Automotive, at Walmart Inc. and am duly authorized to sign this Response;

2. I have read the foregoing Response;

3. To the best of my knowledge, information, and belief, based upon reasonable inquiry, the foregoing is well-founded in fact as is warranted by existing law or a non-frivolous argument for the extension, modification, or reversal of existing law or the establishment of new law; and

4. The foregoing Response is not being filed for an improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of litigation.

Executed this 22th Day of April, 2021

/s/ Kenneth Collins

Kenneth Collins
Merchandising Director, Automotive
Walmart
702 SW 8th Street
Bentonville, AR 72716-0005

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CERTIFICATE OF SERVICE

I, Susan Damron, certify that a copy of the foregoing was served as indicated to the parties listed below on this 22nd day of April, 2021:

The Honorable Lisa R. Barton Secretary to the Commission **U.S. International Trade Commission** 500 E. Street, SW, Room 112 Washington, DC 20436	☒ Via EDIS ☐ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
The Honorable Clark S. Cheney Administrative Law Judge **U.S. International Trade Commission** 500 E. Street, SW, Room 317 Washington, DC 20436 Emails: Cheney337@usitc.gov	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Office of Unfair Import Investigation	
Todd Taylor Jeffrey Hsu Office of Unfair Import Investigations U.S. International Trade Commission 500 E Street, S.W., Room 401 Washington, D.C. 20436 Todd.Taylor@usitc.gov Jeffrey.Hsu@usitc.gov	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Counsel for Complainants NOCO Company	
Deanna Tanner Okun, V. James Adduci, II Lauren E. Peterson Juan J. Garcia **Adduci, Mastriani & Schaumberg L.L.P.** 1133 Connecticut Avenue, NW Washington, DC 20036 Email: NOCO-001@adduci.com Michael J. Garvin Aaron M. Williams **Vorys, Sater, Seymour and Pease LLP** 200 Public Square, Suite 1400 Cleveland, OH 44114-2327 NOCO-ITC@vorys.com	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent Advance Auto Parts, Inc.	
Stefani E. Shanberg **Morrison & Foerster LLP** 425 Market Street San Francisco, CA 94105	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

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Email: sshanberg@mofo.com and AdvanceAutoPartsITC@mofo.com Veronica S. Ascarrunz **Morrison & Foerster LLP** 2100 L Street, NW, Suite 900 Washington, DC 20037	
Respondents AutoZone, Inc. and Best Parts, Inc.	
Adam D. Swain Brian D. Hill Emily Grand **Alston & Bird LLP** 650 F Street NW Washington D.C. 20004 Email: Autozone-ITC@alston.com	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondents Best Buy Co., Inc., Guangdong Boltpower Energy Co., Ltd. and Anker Technology (UK) Ltd.	
P. Andrew Riley Lei Mei Robert A. Hall Jiwei Zhang **Mei & Mark LLP** 818 18th Street NW, Suite 410 Washington, DC 20006 Email:MeiMark-ITC-1256@meimark.com Timothey Wang Hao Ni Neal Massand Stevenson Moore V **Ni Wang & Massand, PPLC** 8140 Walnut Hill Ln. Ste. 500 Dallas, TX 75231	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent Clore Automotive, LLC and Halo2Cloud, LLC	
Beau Jackson **Husch Blackwell LLP** 4801 Main Street, Suite 1000 Kansas City, MO 64112 CloreITC@huschblackwell.com HaloITC@huschblackwell.com Rudolph A. Telscher, Jr. Paul Smelcer Soham Desai **Husch Blackwell LLP**	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

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Respondent Deltran USA, LLC	
Austen C. Endersby **Fox Rothschild LLP** 1030 15th Street, N.W., Suite 380 East Washington, DC 20005 Email: Deltran-ITC@foxrothschild.com Jonathan R. Lagarenne **Fox Rothschild LLP** 1225 17th Street, Suite 2200 Denver, CO 80202 Robert J. Sacco **Fox Rothschild LLP** 777 S. Flagler Drive Suite 1700 West Tower West Palm Beach, FL, 33401 Ryan N. Miller **Fox Rothschild LLP** 2000 Market Street, 20th Floor Philadelphia, Pennsylvania 19103	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent National Automotive Parts Association, LLC (d/b/a NAPA)	
Benjamin Levi Rett Snotherly **Levi & Snotherly, PLLC** 1101 Connecticut Avenue, N.W., Suite 450 Washington, DC 20036 Email: napa-ls-1256@levisnotherly.com	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent QVC, Inc.	
Beau Jackson **Husch Blackwell LLP** 4801 Main Street, Suite 1000 Kansas City, MO 64112 Beau.Jackson@huschblackwell.com Lisa M. Kattan **Baker Botts L.L.P.** 700 K Street, N.W. Washington, D.C. 20001	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

Timothy S. Durst Bethany R. Salpietra **Baker Botts L.L.P.** 2001 Ross Avenue Suite 900 Dallas, TX 75201-2980	
Respondent Shenzhen Carku Technology Co., Ltd., 70mai. Co., Ltd., Antigravity Batteries LLC, Gooloo Technologies LLC, Horizon Tool, Inc., Great Neck Saw Manufacturers Inc., Matco Tools Corporation, Nekteck, Inc., Paris Corporation and PowerMax Battery (U.S.A.), Inc.	
John P. Schnurer **Perkins Coie LLP** 11452 El Camino Real, Suite 300 San Diego, CA 92130-2080 Email: PerkinsServiceCarku-NOCO-ITC@perkinscoie.com James B. Coughlan **Perkins Coie LLP** 700 Thirteenth Street N.W., Suite 800 Washington, DC 20005-3960 R. Tyler Kendrick **Perkins Coie LLP** 1201 Third Avenue, Suite 4900 Seattle, WA 98101-3099	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent Smartech Products, Inc.	
R. Eric Gaum **Taft Stettinius & Hollister LLP** 200 Public Square, Suite 3500 Cleveland, Ohio 44114-2302 Smartech-ITC@taftlaw.com Jaimin Shah **Taft Stettinius & Hollister LLP** 111 East Wacker, Suite 2800 Chicago, Illinois 60601	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail
Respondent Winplus North America, Inc.	
Tuhin Ganguly David Shaw Goutam Patnaik **Desmarais LLP** 1701 Pennsylvania Ave NW, Suite 200 Washington D.C. 20006	☒ Via Electronic Mail ☐ Via First Class Mail ☐ Via Hand Delivery ☐ Via Overnight Mail

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E-Mail: Winplus-1256@desmaraisllp.com Laura Fraedrich Christian C. Contardo **Lowenstein Sandler** 2200 Pennsylvania Avenue, N.W. Washington, D.C. 20037 Email: Winplus@lowenstein.com Meg Slachetka Mark Kesslen **Lowenstein Sandler** 1251 Avenue of the Americas New York, NY 10020 Kevin O. Grange **Lowenstein Sandler** 390 Lytton Avenue Palo Alto, CA 94301	

/s/ Susan Damron

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Australian Government
IP Australia

WATERMARK
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RECD 15 NOV 2016

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8 November 2016

Watermark Intellectual Property Pty Ltd
L 1
109 Burwood Rd
Hawthorn VIC 3122
Australia

Notification of Material Filed Under Section 27

Application Number: 2015258229

Applicant Name: The NOCO Company

Your Ref:

Material has been filed under the provisions of Section 27(1) of the Patents Act 1990, in relation to the above patent application. This material was received on 8 November 2016 within the prescribed period stated under Regulation 2.5 of the Patents Regulations 1991.

In accordance with Section 27(2) of the Patents Act 1990, a copy of the material has been enclosed for your information. This material will be considered by the examiner in due course.

If you need any further information please contact 1300 65 1010. Alternatively, please visit us at www.ipaustralia.gov.au

Yours Faithfully

Patents and Plant Breeder's Rights Administration

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phillips ormonde fitzpatrick
intellectual property

8 November 2016

Telephone Contact : Adrian Crooks
Speed Dial 527

IP Australia
PO Box 200
WODEN ACT 2606

Dear Sir

Australian Patent Application 2015258229 in the name of The NOCO Company
Our Ref AC612478

Pursuant to section 27(1) of the *Patents Act 1990* (Cth) we hereby give notice of matters affecting the validity of Australian Patent Application 2015258229 ("AU2015258229") in the name of The NOCO Company.

AU2015258229 became open to public inspection on 28 January 2016 and claims an earliest priority date of 3 July 2014. A request for examination of AU2015258229 was filed on 18 November 2015.

Attached is a declaration made by Mr Sheridan Lee ("the Lee Declaration"). The Lee Declaration describes the features and operation of two jump starters referred to as the JPS Jump Starter and the JPR Jump Starter.

As set out in paragraphs 3 to 7 of the Lee Declaration, the JPS Jump Starter and the JPR Jump Starter are produced by a company known as Asia Bright Industrial (Hong Kong) Co, Ltd. The JPS and JPR Jump Starters were sold by Asia Bright prior to 3 July 2014 and information about those products was also published prior to that date. IN particular, two presentations produced by Asia bright and describing the JPS Jump Starter and the JPR Jump Starter are dated 19 April 2014 and 23 December 2013 respectively. Further, a product manual in relation to the JPR Jump Starter bears a copyright notice dated 2013.

In light of the above, each of the JPS Jump Starter and the JPR Jump Starter form part of the prior art base for the claims of AU2015258229.

As described in the Lee Declaration, the JPS and JPR Jump Starters have each of the features of claim 1 of AU2015258229. In particular, each of the JPS and JPR Jump Starters has a main unit having an external housing or case with an internal battery pack of lithium ion batteries and a booster cable which can be connected to the main unit via a booster terminal.

The main unit has circuitry for the operation of the jump starter including a microcontroller which receives input signals such as from the buttons on the front face of the unit and provides output signals to control aspects of the device's operation. The circuitry includes a pair of MOSFET switches which along with the microcontroller provide for the operation of the jump starters including various safety protection features.

The JPS and JPR Jump Starters detect the presence of a vehicle battery by measuring the voltage between the clamps of the booster cable and if a voltage above a minimum threshold is measured, a signal is sent to the microcontroller. The JPS and JPR Jump Starters are also able to detect if the booster cable clamps are connected to the incorrect terminals of the vehicle battery and if so a signal is sent to the microcontroller which prevents power from being transmitted to the booster cable terminal from the device battery.

Only if the microcontroller receives a signal indicating the presence of a vehicle battery and no signal indicating a reverse polarity connection, can the device be used to perform a jump start.

Both the JPS Jump Starter and the JPR Jump Starter also have each of the features of claims 2 to 4, 7 to 10, 12, 13, 15 to 21 and 23. Further, none of claims 5, 6, 11, 14 or 22 are inventive in light of the JPS Jump Starter or the JPR Jump Starter. For example, as shown by US2004/0130298 to Krieger, the use of an opto-isolator as sensor in a jump starter was routine well before the priority date of AU2015258229. Similarly, in relation to claim 11, the use of a USB port for charging an internal battery was a routine alternative to the use of a 12 V DC input jack.

Respectfully
PHILLIPS ORMONDE FITZPATRICK



AC

AUSTRALIA

Patents Act

IN THE MATTER of Australia Patent Application No. 2015258229 in the name of THE NOCO COMPANY

- and -

A Notice of matters affecting validity

DECLARATION

I, Sheridan Lee of 1500 Ferntree Gully Road, Knoxfield, Victoria 3180, Australia, do declare as follows: -

1. I am a Product Manager for Brown and Watson International with responsibility for products including battery chargers, inverters, solar controllers, power management of 12V vehicles, jump starters, booster cables, battery terminals and battery maintenance.

2. I have a Bachelor of Engineering in Electronics and Computing (with Honours) from Monash University which I received in 1997 and have more than 10 years' experience in the design and operation of products of the type referred to above and in particular jump starters.

The Asia Bright jump starters

3. Some time prior to 19 January 2015, I became aware that a company known as Asia Bright Industrial (Hong Kong) Co, Ltd ("Asia Bright") was offering for sale certain jump starter products including products identified as the JPS series and the JPR series jump starters.

4. I was interested in the JPS and JPR series jump starters as products which could potentially be sold in Australia. In part, I was interested in these products because of the safety features which they included. In particular I was aware of and interested in

the short circuit, reverse polarity and over temperature protection offered in these products.

5. On 19 January 2015, I sent an email to Asia Bright requesting information about the JPS and JPR series jump starters. Following that email, I had further email communications with Asia Bright in relation to the JPS and JPR series jump starters.

6. I have been advised by Asia Bright that the JPS and JPR series jump starters have been produced and sold by Asia Bright since about 2012 and well before 2014.

7. I have also been provided with copies of two presentations relating to the JPS and JPR series jump starters which I am advised were sent by email from Asia Bright to a third party on or about 22 April 2014.

The JPS jump starter

8. I acquired a sample of the JPS jump starter from a retail store in Australia in early 2015.

9. I have inspected the sample JPS jump starter I acquired, including the internal componentry of that device and I am familiar with how it operates. Attached as Annexure SL-1 is a copy of an instruction manual for the JPS jump starter ("the JPS Manual"). Attached as Annexure SL-2 is a copy of the presentation relating to the JPS jump starter ("the JPS Presentation") referred to in paragraph 7 above. I note that this presentation is dated 19 April 2014. The information presented in the JPS Manual and the JPS Presentation is consistent with how I understand the JPS jump starter to operate.

10. The sample JPS jump starter I have inspected consists of a main unit and a booster cable. The main unit has an external housing or case with an internal battery pack of lithium ion batteries.

11. As shown in the illustrations on page 6 of the JPS Manual, the front panel of the main unit has four buttons identified as "side light", "weak battery jump start", "jump start" and "power". The front panel also includes a battery status indicator, a USB port and a jump start indicator light.

12. The left side panel of the main unit has a 12 V DC input jack for charging the battery. The right side panel of the main unit has a booster terminal or port for inserting the booster cable into the main unit and providing an electrical connection between them as well as a side light. As can be seen in the illustrations on page 6 of the JPS Manual, the booster terminal is shaped so that the booster cable can only be inserted into the terminal in a single orientation.

13. Internally, in addition to the lithium ion battery, the main unit includes the circuitry responsible for the operation of the jump starter. This circuitry includes a microcontroller which receives input signals such as from the buttons on the front face of the unit and provides output signals to control aspects of the device's operation. The circuitry includes a pair of power switches referred to as MOSFET switches which play a role in connecting the lithium ion battery to the booster terminal and hence the booster cable.

14. As noted on page 4 of the JPS presentation, the JPS jump starter has a range of safety protection features including Over Load Protection, Over Charge Protection, Over Discharge Protection, Over Heat Protection, Drain Back Protection, Over Voltage Protection, Short Circuit Protection and Reverse Polarity Protection. The JPS jump starter is also said to be Spark Proof.

15. To operate the JPS jump starter to jump start a vehicle, the booster cable is connected to the booster terminal and the clamps of the booster cable are connected to the vehicle battery. The power button must be pressed to turn on the main unit.

16. The circuitry includes means to enable measurement of the voltage between the clamps of the booster cable. The device is unable to measure voltage below a threshold level of about 1V. With the main unit turned on, the device performs a voltage measurement to determine the voltage between the clamps. If a voltage above the minimum threshold is measured, indicating that the clamps are connected to a vehicle battery, a signal is sent to the microcontroller.

17. If there is no voltage measured, either because the clamps are not connected to a battery or the battery voltage is below the minimum threshold, the relevant signal will not be sent to the microcontroller. Ignoring manual override operation, if the microcontroller does not receive a signal indicating the presence of a vehicle battery, it

will not enable power to be transmitted from the device battery to the booster cable terminal.

18. If the booster cable clamps are connected to the incorrect terminals of the vehicle battery, the measured voltage from the battery will be negative rather than positive. If a negative voltage is measured, a signal is sent to the microcontroller indicating that the polarity of the connection is incorrect. If the microcontroller receives a signal indicating a reverse polarity, it will not enable power to be transmitted from the device battery to the booster cable terminal. The microcontroller will also send an output signal causing the battery status indicator to flash to indicate the existence of a reverse polarity condition to a user of the device (see page 5 of the JPS Manual).

19. If the microcontroller receives a signal indicating the presence of a vehicle battery and no signal indicating a reverse polarity connection, the device is then in a condition to perform a jump start. When the user presses the jump start button on the front face of the main unit, the microcontroller sends a signal causing the power switches to be switched on connecting the device battery to the booster terminal and hence to the vehicle battery via the booster cable.

20. In addition to the main jump start function described above, the JPS jump starter has other functions as described at page 9 of the JPS Manual. The side light on the right side panel of the main unit is turned on and off by the side light button on the front panel. The USB port on the front panel of the main unit can be used to charge electronic devices such as mobile phones. Connection of the device battery to the USB port occurs when the power button on the main unit is turned on.

The JPR jump starter

21. I have also acquired a sample of the JPR jump starter from a retail store in Australia in early 2015.

22. I have inspected the sample JPR jump starter I acquired, including the internal componentry, and am familiar with how it operates. Attached as Annexure SL-3 is a copy of an instruction manual for the JPR jump starter ("the JPR Manual"). Attached as Annexure SL-4 is a copy of the presentation relating to the JPR jump starter ("the JPR Presentation") referred to in paragraph 7. I note that this presentation is dated 23 December 2013.

23. As noted in the JPS Presentation, the JPS jump starter and the JPR jump starter have essentially the same features and safety protections.

24. Like the JPS jump starter, the JPR jump starter consists of a main unit and a booster cable. The main unit has an external housing or case with an internal battery pack of lithium ion batteries. As shown in the illustrations on page 1 of the JPR Manual, the front panel of the main unit has four buttons identified as "side light", "Light SOS", "jump start" and "power". The front panel also includes a battery status indicator, a USB port and a jump start indicator light.

25. The left side panel of the main unit has a 12 V DC input jack for charging the battery as well as a side light. The right side panel of the main unit has a booster terminal or port for inserting the booster cable into the main unit and providing an electrical connection between them as well as a further side light.

26. Internally, in addition to the lithium ion battery, the main unit includes the circuitry responsible for the operation of the jump starter. This includes a microcontroller which receives input signals such as from the buttons on the front face of the unit and provides output signals to control aspects of the devices operation. The circuitry includes a pair of power switches known as MOSFET switches which play a role in connecting the lithium ion battery to the booster terminal and hence the booster cable.

27. As noted on pages 9 and 10 of the JPR presentation, the JPR jump starter has a range of safety protection features including Over Heat Protection, Over Voltage Protection, Over Discharge Protection and Reverse Polarity Protection. On page 5 of the JPR Manual, there is further reference to and discussion of these safety features including spark protection, reverse polarity protection and overheating protection.

28. The operation of the JPR jump starter is essentially the same as for the JPS jump starter as described above. The booster cable is connected to the booster terminal and the clamps of the booster cable are connected to the vehicle battery. The power button must be pressed to turn on the main unit (see page 7 of the JPR Manual).

29. As described at page 5 of the JPR Manual, the circuitry includes means to enable measurement of the voltage between the clamps of the booster cable. The device is unable to measure voltage below a threshold level of about 1V. With the main unit

turned on, the device performs a voltage measurement to determine the voltage between the clamps. If a voltage above the minimum threshold is measured, indicating that the clamps are connected to a vehicle battery, a signal is sent to the microcontroller.

30. If there is no voltage measured, either because the clamps are not connected to a battery or the battery voltage is below the minimum threshold, the relevant signal will not be sent to the microcontroller. Ignoring manual override operation, if the microcontroller does not receive a signal indicating the presence of a vehicle battery, it will not enable power to be transmitted from the device battery to the booster cable terminal.

31. If the booster cable clamps are connected to the incorrect terminals of the vehicle battery, the measured voltage from the battery will be negative rather than positive. If a negative voltage is measured, a signal is sent to the microcontroller indicating that the polarity of the connection is incorrect. If the microcontroller receives a signal indicating a reverse polarity, it will not enable power to be transmitted from the device battery to the booster cable terminal. The microcontroller will also send an output signal causing the battery status indicator to flash to indicate the existence of a reverse polarity condition to a user of the device (see page 7 of the JPR Manual).

32. If the microcontroller receives a signal indicating the presence of a vehicle battery and no signal indicating a reverse polarity connection, the device is then in a condition to perform a jump start. When the user presses the jump start button on the front face of the main unit, the microcontroller sends a signal causing the power switches to be switched on connecting the device battery to the booster terminal and hence to the vehicle battery via the booster cable.

Japanese Utility Patent JP3185027

33. I have been provided with a copy of the specification of Japanese Utility Patent JP3185027 as well as a machine translation of the specification of that patent. Attached as Annexure SL-5 and Annexure SL-6 are copies of that specification and translation.

34. I am advised that the applicant for JP3185027 is Asia Bright. Based on the translation and the figures of JP3185027, the jump started described appears to be very similar to

the JPR jump starter described above. The JP3185027 jump starter has a booster cable 200 which can be connected to a main unit 100. The main unit 100 has a housing 10 with a charging circuit 1, a lithium ion battery 2, an output circuit 3 and a control circuit 4.

35. The main unit 100 also has a DC input terminal 20 for example a 12V DC jack, for charging the lithium ion battery via the charging circuit. The main unit 100 has a DC output terminal 31 for connection to booster cable 200, a second DC output terminal 32 in the form of a PC power cable jack, a third DC output terminal 33 being a USB terminal and a fourth DC output terminal 34 being a cigarette lighter terminal.

36. Connected to the control circuit 4, the main unit 100 has a power switch 41, a jump-start switch 42, and override switch 43 and a side light on/off switch 44. Also connected to control circuit is a charge display portion which includes red, orange, yellow and green LED lights to display the charge level of the battery and emergency warning lights 53A and 53B. The main unit 100 also has a pair of side surface lights 54A and 54B.

37. The control circuit 4 may be a microcomputer which controls the charge display 51, the charging circuit 1 and the output circuit 3. The control circuit controls the charging circuit during a charging mode when a voltage above a predetermined value is detected at the DC input terminal 20. The control circuit controls the output circuit during a jumpstart mode when a normal voltage above a predetermined value is detected at the DC output terminal 31 via the booster cable 200. Such a jump start mode is initiated by pressing the jump start switch 42 for a short period of time.

38. As described, it is also possible to use the jump starter on a vehicle battery which is discharged to the extent that a voltage above the predetermined value can not be detected at the DC output terminal 31. Such a jump start mode is initiated by pressing the jump start switch 42 and the Write-Select (SOS) switch together for a longer period of time. In this mode, the requirement for detection of the presence of a battery (by measuring a voltage across the DC output terminal 31) is overridden by the user.

Australian Patent Application 2015258229

39. I have reviewed the specification of Australian Patent Application 2015258229 in the name of The NOCO Company including claims 1 to 23.

40. Based on my inspection of the JPS Jump Starter and the JPR Jump Starter I believe that those products have each of the features of claims 1 to 4, 7 to 10, 12, 13, 15 to 21 and 23 of Australian Patent Application 2015258229.

I make this declaration conscientiously believing the statements contained in this declaration to be true and correct.

Declared at Knoxfield

This 7 day of NOV 2016

By: _____

SHERIDAN LEE

AUSTRALIA

Patents Act

IN THE MATTER of Australia Patent Application No. 2015258229 in the name of THE NOCO COMPANY

- and -

A Notice of matters affecting validity

Annexure SL-1

Calibre

PRECISION POWER PERFORMANCE

12V 3300mAh MINI JUMP START

Instruction Manual



Manufactured and packaged for SRGS PTY LTD ABN 23 113 230 030
751 Gympie Road, Lawnton, Queensland 4501, Australia

Calibre

PRECISION POWER PERFORMANCE

12V 3300mAh MINI JUMP START

Instruction Manual

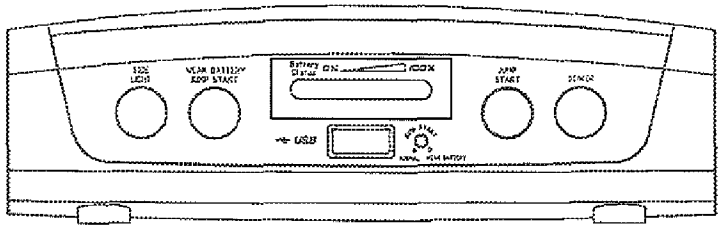


12 MONTH WARRANTY

ADC-EX0002
IPRX2025-00885

INSTRUCTION MANUAL

CALIBRE 12V 3300mAh MINI JUMP START
LITHIUM-ION POLYMER



Model# JPS-3300M (3.3Amp) **PLU: 366282**

- PLEASE READ THE INSTRUCTIONS CAREFULLY BEFORE USING THIS PRODUCT. MAKE CAREFUL NOTE OF SAFETY INSTRUCTIONS, WARNINGS & CAUTIONS
- PLEASE KEEP THIS INSTRUCTION MANUAL FOR FUTURE USE
- THIS PRODUCT SHOULD ONLY BE USED FOR ITS INTENDED PURPOSE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE DAMAGE AND/OR PERSONAL INJURY
- PLEASE ENSURE THIS PRODUCT IS FULLY CHARGED BEFORE INITIAL USE
- IF NOT USED REGULARLY, PLEASE ENSURE YOU RECHARGE EVERY 3 MONTHS TO MAINTAIN OPTIMUM BATTERY LIFE
- DO NOT STORE THE DEVICE IN DAMP, WET LOCATIONS OR WHERE THE TEMPERATURE MAY REACH BELOW 3°C OR EXCEED 40°C
- ALTHOUGH THE DEVICE IS PROTECTED FROM EXTREME HIGH TEMPERATURES, IT IS NOT RECOMMENDED TO STORE INSIDE THE CAR DURING SUMMER TIME.

WARNING:
RISK OF EXPLOSIVE GASES. Working in the vicinity of a LEAD ACID battery is dangerous because it can generate gases. It is important to remember that batteries generate explosive gases during normal operation.

ADC EX1002
IPR2025-00885

ATTENTION:

Failure to follow instructions and cautions below may result in personal injury or harm as well as impact on the products performance.

CAUTION:

- Use the product exclusively for those purposes for which it has been developed
- Do not use in rainy or damp conditions
- Keep away from flammable material
- Ensure the device is used in accordance with the instructions and safely stored when not in use
- Keep away from children
- Do not expose the device directly to solar radiation and / or other sources of heat
- Do not drop this product as doing so may cause damage and impact performance
- Not intended for use by people (including children) with reduced physical, sensory, mental capabilities, or lack of experience and knowledge
- When not in use, disconnect the DC connector of the universal adaptor from the Mini Jump Starter. The Mini Jump Starter will change to power save mode to preserve the battery
- Do not modify or disassemble the product. If there is a problem with the product please contact place of purchase for further assistance
- If not used regularly, please ensure you recharge the product every 3 months to maintain optimum battery life

WARRANTY

This product is guaranteed against defects for a period of 12 months from date of purchase. This warranty is provided by Super Cheap Auto Pty Ltd ACN 085 395 124 (Supercheap Auto) of 751 Gympie Rd Lawnton QLD 4501 Ph (07) 3482 7500. Supercheap Auto will offer a repair, replacement product or store credit if the product is assessed as being defective during the warranty period.

To claim under this warranty, take this product to the Front Service Desk of your nearest Supercheap Auto store. For store locations, visit www.supercheapauto.com.au (AUS) or www.supercheapauto.co.nz (NZ). You will need your receipt or proof of purchase. Additional

To claim under this warranty, take this product to the Front Service Desk of your nearest Supercheap Auto store. For store locations, visit www.supercheapauto.com.au (AUS) or www.supercheapauto.co.nz (NZ). You will need your receipt or proof of purchase. Additional

information may be requested of you to process your claim. Should you not be able to provide proof of purchase with a receipt or a bank statement, identification showing your name, address and signature may be required to process your claim.

This product may need to be sent to the manufacturer to assess the defect before determining any claim. Faults or defects caused by product modification, misuse and abuse, normal wear and tear or failure to follow user instructions are not covered under this warranty.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Any expenses incurred relating to the return of this product to store will normally have to be paid by you. For more information contact your nearest Supercheap Auto store.

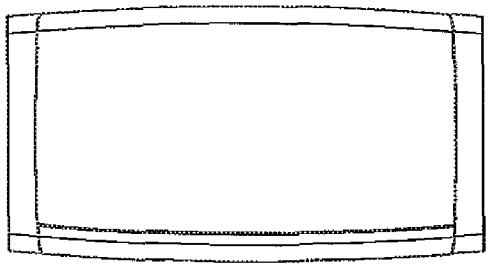
The benefits to the consumer given by this warranty are in addition to other rights and remedies of the Australian Consumer Law in relation to the goods and services to which this warranty relates.

Specification:

Model No.	JPS3300M
Application	Jump Start 12V Automative Starting Batteries
Battery Type	Lithium-Ion Polymer
Battery Capacity	3.3Amp
Cranking Ampere	330CCA
USB 2.0 Outlet	5V/2.0A Maximun
Super Bright LED	YES
Capability	Able to crank most Motorbikes & Petrol Engines below 2500cc

Operating Temperature: -20℃ to + 45℃

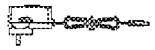
CALIBRE 12V 3300mAh MINI JUMP START



Main unit

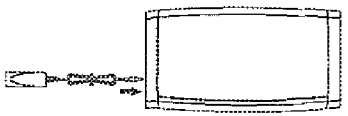
L158 X H48.5 X D85mm

CONTENTS:

			
AC/DC Adapter	Booster Cable	Carry Bag	In Car Charger

Charging the device

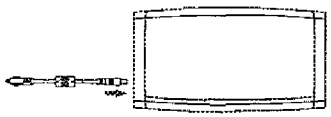
1. Charge via AC adapter



a) Connect the AC adapter to the 12VDC input of the device.

b) Attach the adapter to AC mains, the adapter will automatically commence charging the battery.

2. Charge via DC charger



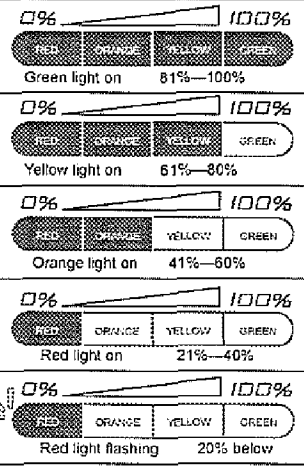
a) Connect the charger to the 12VDC input of the device.

b) Attach the DC charger to 12v accessory socket. The red light of the DC charger will light on and the charge will automatically commence.

Charging indication

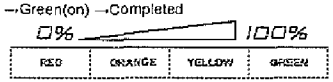
Please refer to light indication table to show charge status and battery capacity (shown on right).

Capacity Spectrum



LED process for charging

Red(flashing)→Red(on)→Orange(flashing) →Orange(on) →Yellow(flashing) →Yellow(on) →Green(flashing) →Green(on) →Completed



ATTENTION

Recharge the device immediately if the red light of the battery indicator is flashing.

ATTENTION:

1. USE ONLY THE AC TO DC ADAPTER AND THE DC CHARGER INCLUDED IN THE PACKAGING.
2. DO NOT ATTEMPT TO USE OTHER CHARGING UNITS, DOING SO MAY CAUSE DAMAGE TO THE BATTERY.
3. DO NOT CRANK THE CAR WHEN CHARGE IS IN PROCESS. ONLY FEATURES, SUCH AS USB OUTPUT CAN BE USED DURING THE CHARGING PROCESS.
4. ONCE FULLY CHARGED DISCONNECT THE CHARGER FROM THE POWER SOURCE AND DETACH THE DC PLUG FROM THE DEVICE.
5. ALTHOUGH THE DEVICE IS PROTECTED FROM EXTREME TEMPERATURE, IT IS NOT RECOMMENDED TO OPERATE AT AMBIENT TEMPERATURE LOWER THAN -20℃ OR HIGHER THAN +45℃. IN FACT THE UNIT MAY NOT BE ACTIVATED OR MORE CRANK ATTEMPTS MAY BE NECESSARY. MOREOVER, THE CHARGING PROCEDURE WILL NOT START IF THE TEMPERATURE OF THE BATTERY PACK IS EXCEEDING THE RANGE FROM 3℃ TO 40℃.
6. MALFUNCTION – BATTERY INDICATOR WILL BE FLASHING SIMULTANEOUSLY AS PROTECTION CIRCUIT HAS BEEN ACTIVATED. PLEASE FIX THE PROBLEM BEFORE TURNING ON AGAIN.

SIDE LIGHT

Press SIDE LIGHT BUTTON to turn it on. The light must be turned off after use in order to avoid depleting the battery power.

5V USB OUTLET

Connect the electronic appliance to the USB port of the device and turn the power on. It can deliver 5.0VDC 2.0A to power up most 5VDC input digital devices like mobile-phone, tablet PC as well as other 5V USB products. (Original cable is required for delivering maximum current)

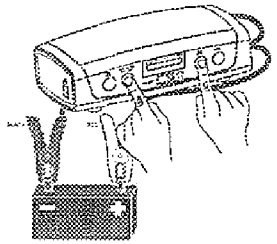
Recommendation:

- If it is anticipated that the Jump Starters is to be used in very cold conditions, it is recommended that it is kept indoors in a warm environment. Furthermore, it is recommended that to keep the device on charge for overnight prior to use. It is also recommended that when preparing for a jumpstart in extremely cold weather that you connect the clips to disabled vehicle battery and turn the POWER on, then activate the JUMP START feature by depressing the Jump Start button (JUMP START red light on), then wait for 3-4 minutes prior to cranking the vehicle. This will help activate or "warm" the disabled vehicle battery for best possible results.
- Sometimes the car engine does not start on the first crank, so we recommended several attempts (no more than 5), so that the battery is warmed up and its performance enhanced.
- For best possible performance, it is recommended to recharge the Mini Jump Start every 3 months. If the battery is not fully recharged after use and not regularly charged at the above stated intervals, the device will not operate properly and may quickly deteriorate.

ATTENTION!

1. The activity of engine cranking will last for 4 seconds and the Jump Start function will automatically cut off . If the vehicle has not started in this time, wait for 15 seconds and repeat again. (Maximum 5 cranking attempts are recommended, otherwise the device might be damaged.)
2. Once the car engine has successfully started, press the power button to turn off the device as soon as possible.
3. Always recharge the device after use.
4. In case of reversed polarity or if you try to crank an engine exceeding its capability, the device will enter automatic protection mode and all functions will be terminated. The red LED on the Jump Start will flash. Please turn off the device immediately and try the next attempt until the conditions are clear.

OPERATION OF CAR WITH A WEAK BATTERY (EXTREMELY LOW VOLT.)



Indication: Jump Start red light is flashing



Power on the Mini Jump Starter. To energise the output manually, hold the Jump Start and Weak Battery Jump Start simultaneously for 3 seconds. The Jump Start light is flashing and the clamps will be live in this condition. Please ensure correct polarity is connected before these 2 buttons are pressed, otherwise the device will be severely damaged. Turn the vehicle's ignition over until the engine starts, the device will turn off after cranking for 4 seconds. If the vehicle has not started within this time, wait for 15 seconds and repeat again. (Maximum 5 cranking attempts are recommended, otherwise the device might be damaged.)

ATTENTION:

1. Once the car engine has successfully started, press the power button to turn off the device as soon as possible.
2. The device will automatically shut down after idling for 2 minutes.
3. Always recharge the device after use.
4. While the device has inbuilt spark and surge protection, it is best to avoid trying to crank an engine exceeding its capability.
5. In cases where the operation has failed and Jump Start red light is flashing, the car battery is either short circuiting or dead.
   Please replace the battery as soon as possible or get in contact with a professional to examine the car.

CONDITIONS OF USE

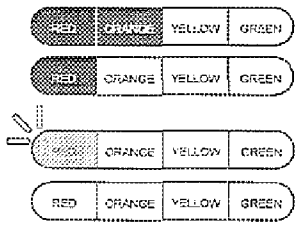
Ensure the below conditions are met before pressing the JUMP START button.

1.

Ensure the capacity of the battery is full



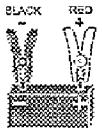
Jump Start can only be used when the spectrum lights up to GREEN or YELLOW.



Jump Start can't be used when the spectrum of ORANGE, RED light is illuminated or RED light is flashing, fully charge the device immediately.

2.

Ensure the polarity is properly connected



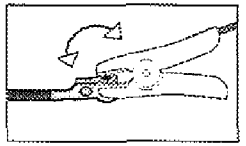
Indication:



In cases of reversed polarity, the battery indicator will be will be flashing simultaneously once the power is turned on.

3.

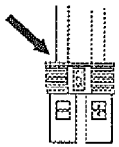
Ensure the contact terminals of the car battery are clean.



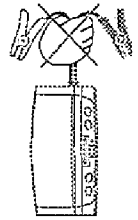
Remove any corroded substance from battery terminals and ensure correct contact point at the clip. Please note that the battery terminals must be properly connected before pressing the JUMP START button.

4.

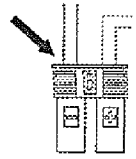
Ensure the cable is properly wired and well connected.



Detach by removing the plug only. DO NOT pull the cable to detach it from the device.

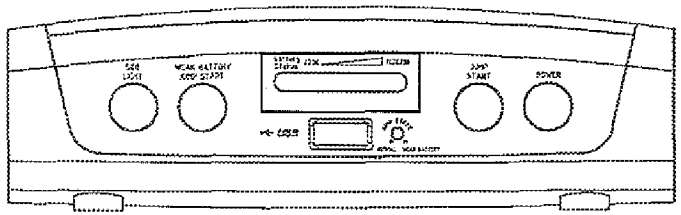


DO NOT bend the cable when carrying the device.

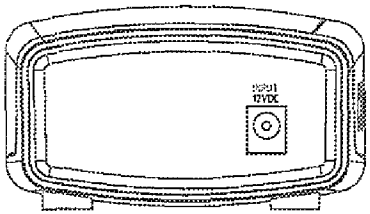


ILLUSTRATIONS:

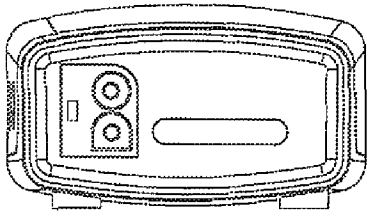
Front panel



Left side panel (DC jack for charging)



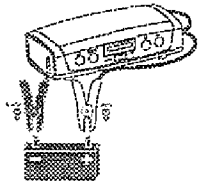
Right side panel (Booster terminal & side light)



OPERATION OF CAR CRANKING

Step 1

Connect the Battery



Attach the red positive clamp (+) to the positive (+) battery post, then attach the black negative clamp (-) to the negative (-) battery post.

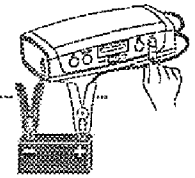
Indication:



Jump Start can only be used when the spectrum lights up to GREEN or YELLOW.

Step 2

Turn On

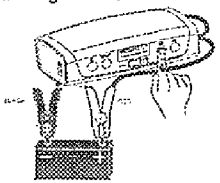


Press power button for 1 second to turn the device on.

Fully charged condition as indicated on left is important for cranking the car successfully.

Step 3

Cranking the car



Press JUMP START button to turn on the JUMP START function

Indication:



JUMP START red light is on

Note: If the red light is flashing, DO NOT continue to try and start. The battery needs replacing.

Step 4

Start the engine



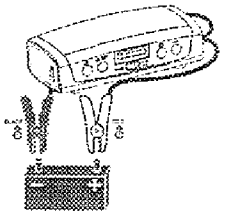
START

Step 5

Cranking up the car then turn power off

Once the car engine has started, press power button again to turn the power off.

Remove the clamps (negative first) from the battery as soon as possible.



AUSTRALIA

Patents Act

IN THE MATTER of Australia Patent Application No. 2015258229 in the name of THE NOCO COMPANY

- and -

A Notice of matters affecting validity

Annexure SL-2

Mini Jump Starter

JPS Series Presentation

Purpose of JPS development

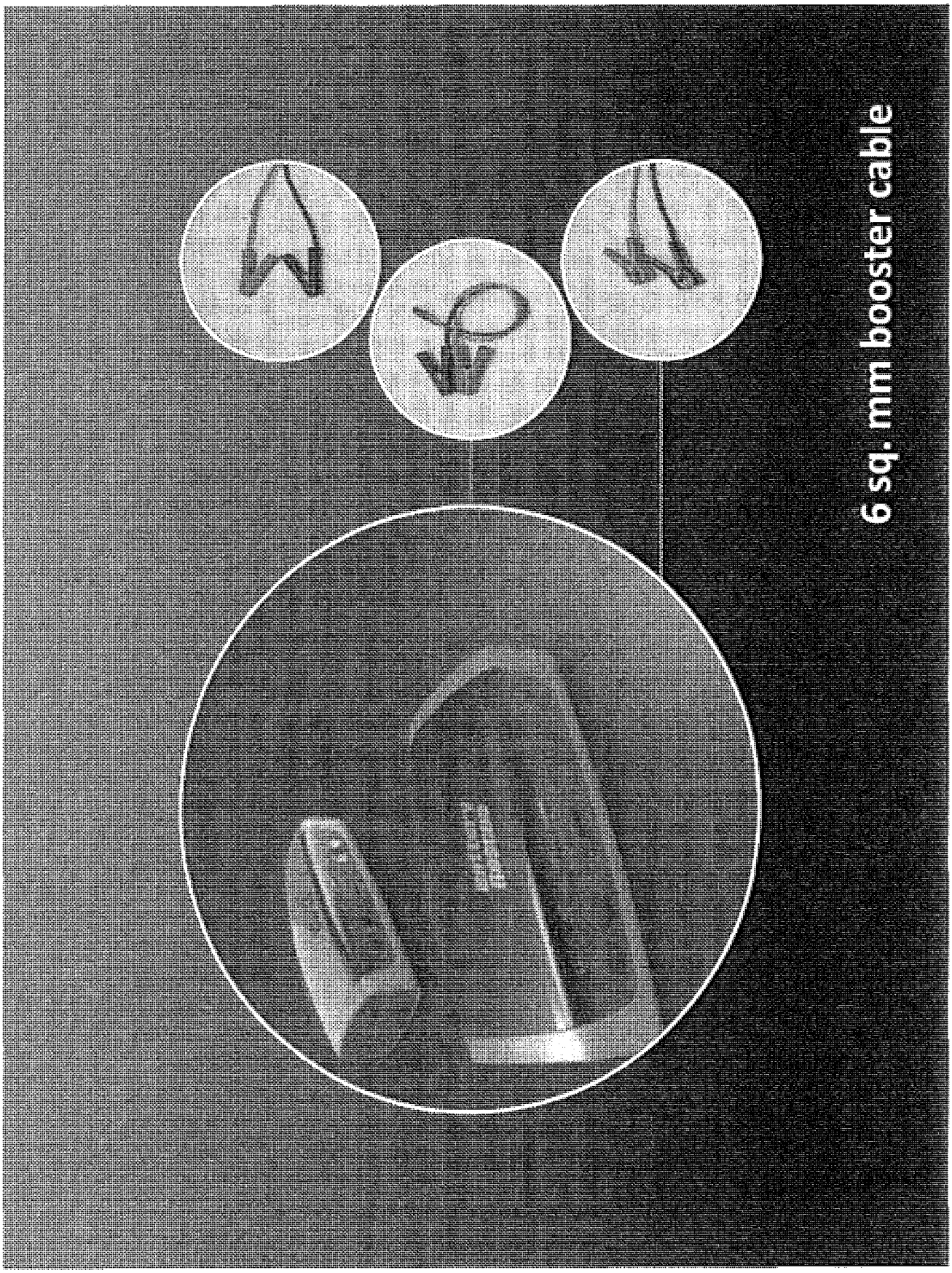
To attack the bigger consumer market instead of professional DIY.

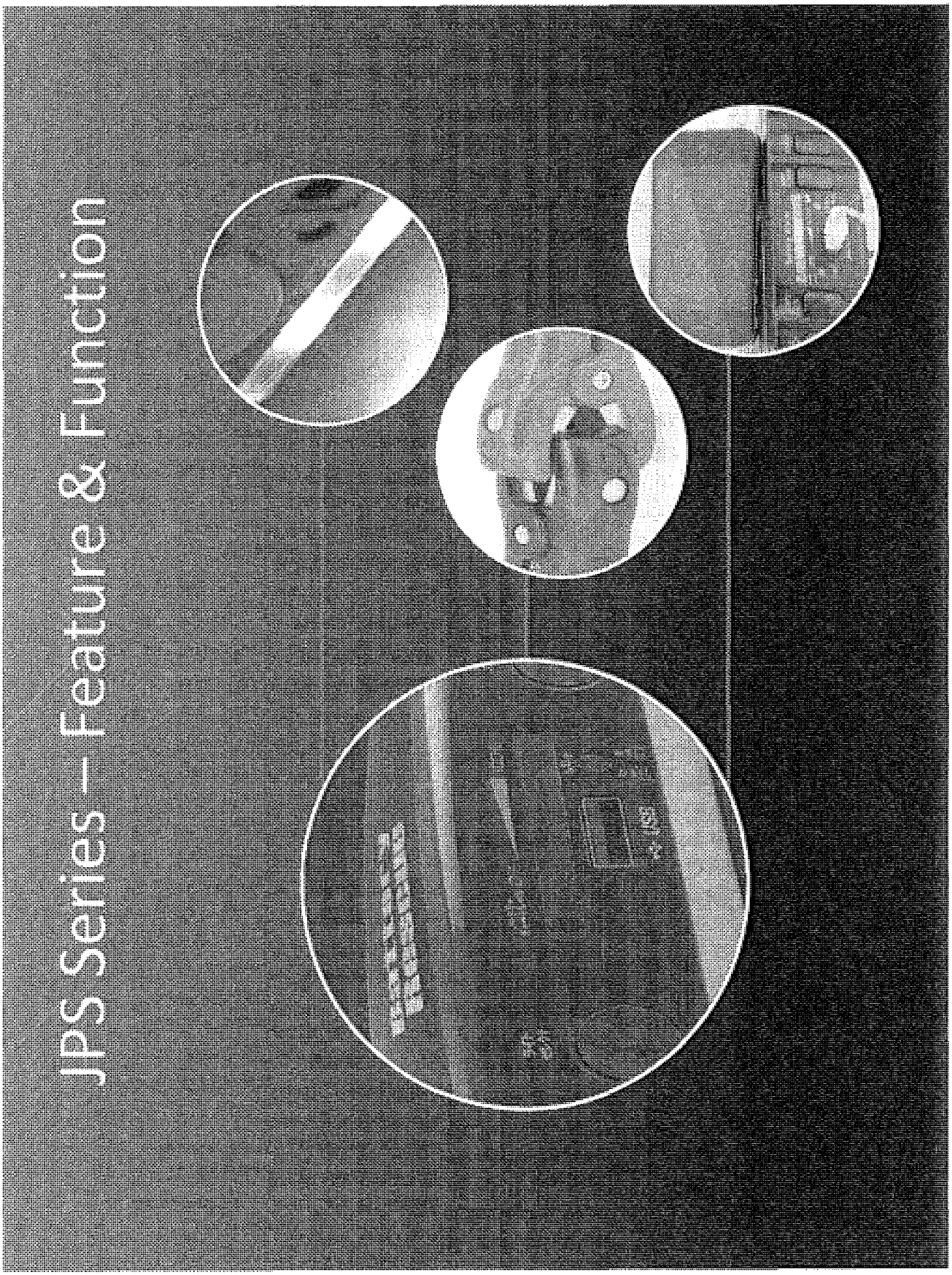
Cost reduction by taking off those expensive parts and simplifying the packing without carry bag in order to achieve the market acceptable price.

The performance of JPS would be same as JPR, so they are the most safety and powerful Lithium Jumpstart in the world

Trendy &
Graceful
Design

1. Over Load Protection
2. Over Charge Protection
3. Over Discharge Protection
4. Over Heat Protection
5. Drain Back Protection
6. Over Voltage Protection
7. Short Circuit Protection
8. Reverse Polarity Protection
9. Parallel Charging
10. Spark Proof
Battery Fighter doesn't aim to be the smallest but only aim to be the most secure & SAFE


6 sq. mm booster cable


JPS Series – Feature & Function

Advantage of JPS

A. Trendy design, graceful appearance

B. Price advantage

C. Same features as JPR series

D. Same protections as JPR series

E. Retailing packaging, suitable for retailing in Department Store and Hyper Market

F. Optional with Smart Phones charging accessories.

G. Focus on the End User Market instead of Professional DIY Market

H. Good for Premium Market

I. Streamline housing, easy for storage

Specification of JPS Family

Mini Jump Starter - JPS Series

Model No.	JPS1500M	JPS2200M	JPS3300M
Application	Jump Start 12V Automotive Starting Batteries		
Battery Type	Lithium-Ion Polymer		
Battery Capacity	1.5A	2.2A	3.3A
Cranking Ampere	150A	220A	330A
USB 2.0 Outlet	5V / 2.1A Maximum		
Super Bright LED	YES		
Capability	Able to crank up most of the Motorbikes	Able to crank up most of the Motorbikes & Petrol Engines below 2000c.c.	Able to crank up most of the Motorbikes & Petrol Engines below 2500c.c.

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Comparison - SAFETY

	JPS330M	Brand A	Brand B	Brand C
Photo				
Battery Capacity	11.1V,3300mAH	11.1V,3600mAH	11.1V,2600mAH	11.1V,2000mAH
Over Load	YES	NO	NO	NO
Over Heat	YES	NO	NO	NO
Surge Drain Back	YES (AUTOMATIC)	YES (1-TIME PROTECTION)	YES (1-TIME PROTECTION)	NO
Reverse Polarity	YES	NO	NO	NO
Short Circuit	YES	NO	NO	NO
Spark Proof	YES	NO	NO	NO
Casing (Fire Proof)	YES , 94V0	NO	NO	NO

AUSTRALIA

Patents Act

IN THE MATTER of Australia Patent Application No. 2015258229 in the name of THE NOCO COMPANY

- and -

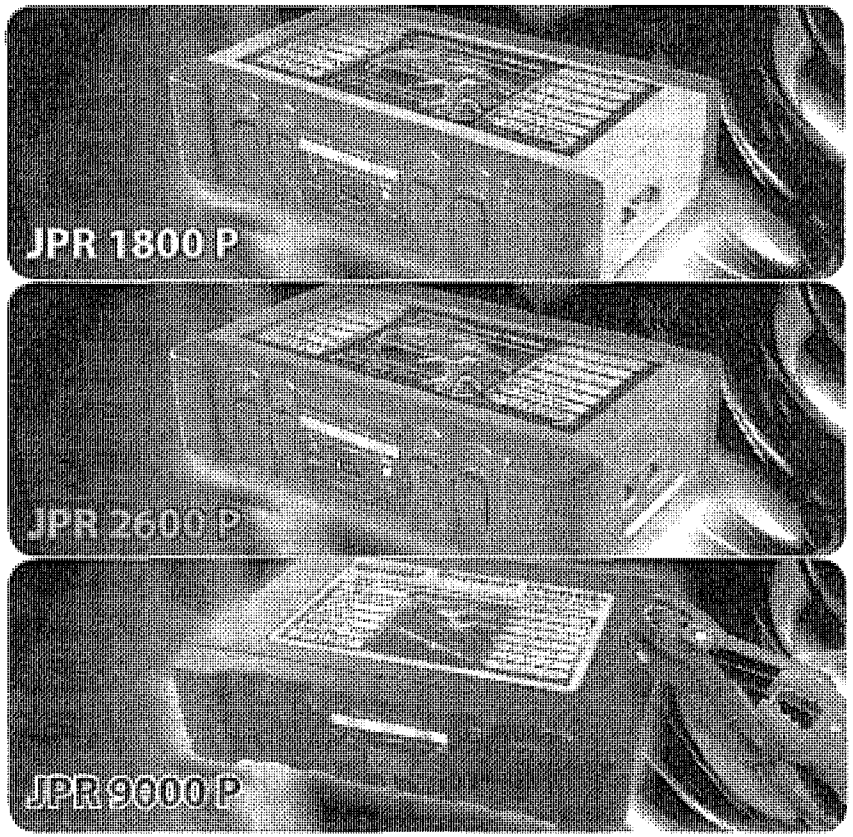
A Notice of matters affecting validity

Annexure SL-3

PROFI power GERMANY

„Power Punch“

12VDC
Mini Jump Start



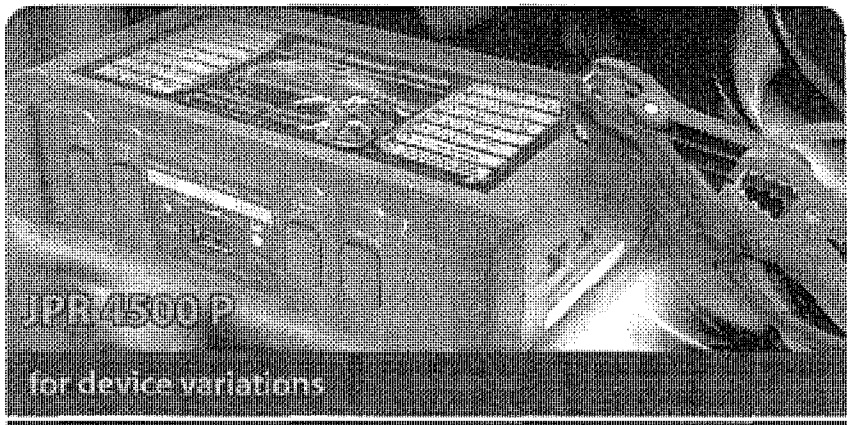
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PROFI power GERMANY

„Power Punch“

12VDC
Mini Jump Start

USER MANUAL



for device variations

JPR 9000 P, JPR 4500 P, JPR 4500 6V, JPR 2600 P, JPR 1800 P
mit 5V USB 2.0 Power Outlet 2000mA

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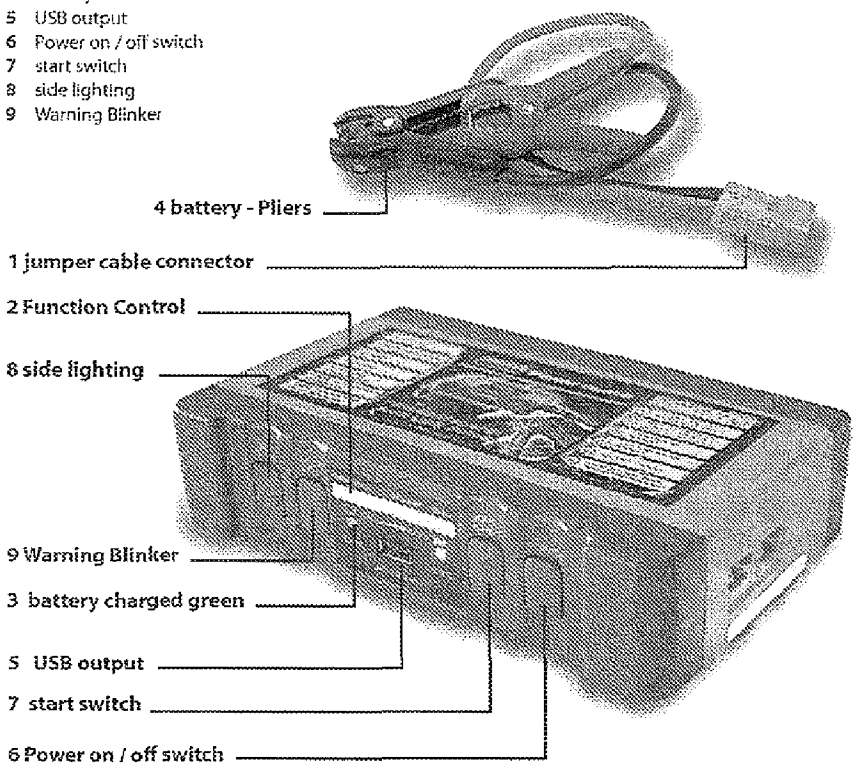
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„Power Punch“

12VDC
Mini Jump Start

Handling the Unit

1 jumper cable connector
2 Function Control
3 battery charged green
4 battery - Pliers
5 USB output
6 Power on / off switch
7 start switch
8 side lighting
9 Warning Blinker



Read this manual before using the device, very carefully and keep it in order once needed even for disclosure to third parties, at any time for future reference.
Charge 12 hours before first use. For 12V systems only, except JPR 4500 6V for 6V-board systems.

Table of Contents

1 General Safety
2 Scope of delivery
3 Intended use
4 Features, Functionality
5 Connection / Operation of the jumper device
6 Care and cleaning of the unit
7 Troubleshooting
8 Warranty
9 Disposal
10 Specifications
11 Conformity

Please observe the following safety instructions.

1 General Safety - IMPORTANT -

The axhess GmbH & Co.KG, Industriestrasse 11, D-56598 Rheinbrohl, Germany, is not liable for damage or consequential damage caused due to non-observance of this manual. To property or personal injury and caused by not following the instructions or improper use of the device, we assume no liability. In such cases, the warranty becomes void. Particularly the unauthorized intervention, alteration or modification of the device or its accessories, is expressly not permitted. The device must only be charged with the supplied charger or 12V charging cable.

The warranty is void if:

- Equipment damage due to mechanical influences and / or overvoltage.
- Any change to the connecting cables, output cables and other accessories.
- Use for others, as described in the instructions purposes.
- Fluid action and / or appropriate storage instructions.
- Consequential damages due to the improper use and / or defective Batteries may arise.

Operate the device only as intended according to its use.
Make sure that when you are dealing with the product is not crushed the charging and booster cables or damaged by sharp edges.

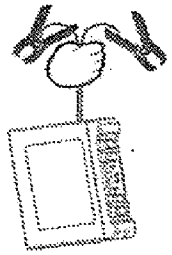
Always place and use the jump start unit in the vicinity of combustible or flammable materials, or hazardous environments, such as Gasoline, thinner, oil, gas or other solid, flammable materials.

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Do not expose the start device is not high or very low temperatures, strong vibrations or humidity.
Always look for a safe placement of the device! The start device must be securely installed / placed so that it does not fall down or fall over.
The device is not a toy. It does not belong in the hands of children.
In industrial facilities, the safety regulations of any relevant professional association are observed.
Caution! Working in the vicinity of lead-acid batteries is dangerous! Batteries emit explosive gases during operation and loading at startup help! Always suitable clothing, gloves and safety goggles when working on a battery!
Battery acid is corrosive! Possibly. Thoroughly acid splashes immediately with plenty of water and seek medical advice. If battery acid gets in the eyes, immediately wash out at least 10 minutes under running water, seek medical attention.

Never smoke near the battery, or use open flames, sparks and avoid sparks!
With the included charger only this start device must be loaded. Do not use another charger to charge the booster unit. The use of accessories or attachments, that are not recommended by the manufacturer may cause damage to the unit or injury to personnel, and! In addition, the warranty expires!



To avoid damage to the terminals and the instrument, never pull on the cable, always using connector / terminal disconnect the jumper connection.
The charging and jump start cables must be in good condition. Lines are damaged, do not use start device. First device repaired by an authorized technician.
Any flammable objects such as Leave candles on the apparatus. No objects filled with liquids, such as Water containers, beverage containers on the device or turn around. Only undamaged batteries support. Ensure a sufficient level of liquid in the battery (open lead-acid batteries). Note the Hinwiese the battery / vehicle manufacturer. These can be found in the accompanying document, the log of your vehicle. Or, contact the battery manufacturer. Never remove the battery clamps while jump starting! Not short circuit terminal clamps! First connect to the battery terminal clamps in the correct polarity, then hitting jump start switch. Clean the battery terminals and connectors on the vehicle only.
Work. For your protection and security are not alone or at least so that another person is always within calling distance Personal metallic objects (such as rings, cuffs and necklaces, watches) before working on the starter Remove the battery to prevent accidental short-circuit Short-circuit voltages as Melt rings and so cause severe burns.

2 Scope of delivery

1 start device
1 Charger 230V / 12V
1 Car Charger 12V (not included with JPR1800)
1 set of jumper cables with connectors
1 storage bag
1 12V connection cable (only device JPR9000)
1 User manual
1 Fully recyclable retail packaging.

3 Intended use

This jump starter provides additional support for the 12V vehicle battery startup problems in vehicle engines. As far as this by a weak or defective
Vehicle battery caused. The start device can not replace the vehicle battery.
Use the start device not as a starter battery replacement, EXPLOSION!
Connect the start device exclusively with the battery. No contact with the
Making body! The vehicle electrical system could be damaged.
Do not let the booster unit and do not burden the body with additional devices
Weight, you put the device to shock or severe vibration, protect the unit from heating up, put the device or check the device in flames, keep it always dry, submerge it in liquids one, pour never spill liquids on the start device. LIONS EXPO DANGER!
Use of the booster unit is permitted only in dry areas or dry conditions. Contact with moisture, such as fog, rain, snow, Kondensnässe etc. must be avoided. Any use other than that described above will damage the product and is also associated with dangers like short-circuit, burns, electric shock, etc.. The entire product and its accessories may not be changed or modified. the device housing not be opened! Observe these safety instructions!

4 Technical Features / Amenities

This start device is equipped with a high quality lithium battery. The device can be as light and compact, use anywhere to help launch or as a power charger for USB devices. Avoid high ambient temperatures. Lithium batteries should be kept cool. Overheated up vehicle interiors and high ambient temperatures should be avoided. Store the device therefore not in the vehicle. Minus ambient temperatures have a significant influence on the battery capacity. This is greatly reduced in cold weather. Therefore, do not store or winter, the start device in the vehicle.
The input voltage of the supplied charger voltage corresponds to the household. (230V AC 50Hz) Output power is 1A.
Finally, always use the power values __of the jumper and the connected device to support battery. (See table in the appendix to use this manual) Only rechargeable 12V lead-acid batteries are supported! The jump starter is suitable for all lead-acid for GEL, AGM and - batteries. Depending on the device version for 6V or 12V batteries. Other types of batteries and battery voltages must not be connected to the emergency starter.

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Lithium batteries are subject to minimal self-discharge. Every 6 months later than the start device is to be loaded in order to avoid a full discharge of the battery device. Possible damage to the start device which arise due to full discharge or overheating is not in the warranty. Store the start device always in a cool environment at about 15 ° C to 20 ° C Vehicles often feature electronic electrical facilities. These can be damaged by high rise surges and spikes. Please read carefully before you connect the device to a vehicle, the manual of the vehicle, whether a jump-start aid is permitted. Note before connecting the safety warnings in this manual and your vehicle and battery manufacturer this unit to a 12V car battery. Note the warning symbols on start device!

4.1 This jump starter is fully automatic. There is only from jumpstart power when the power switch first and then Jump Start switch was activated and recognizes a corresponding resistance (car battery). The jumper cables remain without power supply while the device is not connected to a 12V vehicle battery and the switch is not pressed. Connect the device only to jump start the battery terminals. The start device never connected to the vehicle body! Exclusively connect to the battery in the correct polarity!

The start device has several protection mechanisms:
Overcharge protection / under voltage protection Overload the lithium battery is prevented by the charger. At too low a charge of the battery, the device switches off automatically.

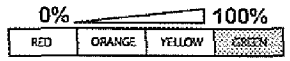
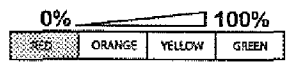
Spark protection.
In mutual contact and terminal clips no sparks are generated.
Reverse polarity protection Connecting them incorrectly, confusing the polarity, the device switches off immediately. The battery and the start device will be protected.

Overheating protection
The device switches off automatically when the max. Operating temperature is exceeded the device housing. It automatically turns on again when it has cooled down accordingly.

4.2 Features

1. Fire retardant plastic housing
2 Automatic shut off to save energy. Approx. 5 seconds after starting a car engine.
3 High-start performance, high power reserve for USB devices
4 Integrated emergency work light side of the housing
6 Spark protection
7 Reverse polarity, short circuit protection.
8 Automatic undervoltage lockout integrated devices battery
9 Overheat protection, automatic shutdown in case of overheating of the device
10th Convenient connectors for jumper cables
11th Depending on the ambient temperature, up to 10 start-up aid in succession with a batterycharge possible.
12th 5V 2000mA USB 2.0 output, for operating or charging USB device.
13th Lithium battery with high life expectancy by following the instructions.
14th LED Warning light , LED side light (worklight)
15th Cable with OBDII connector (only with JPR9000)
16th By removable caps from dust and moisture-proof equipment outputs

4.3 LED Funktionskontrolle und Ladestatus

Rot bis Grün an 	After pressing the ON OFF button lights up the spectrum. It disappears after about 3 seconds. By pressing the SOS button is lit again, and the spectrum shows the current charge level of the jumper device. Green 81-100% jumpstart function OK.
	Yellow LED lights 61 - 80% charged. jumpstart function OK.
	Orange LED lights, 41 - 60% charged. Every 6 months, the unit should be charged and to prevent a discharge damage to the device battery. Jumpstart function OK but limited power.
	Red LED lights 21 - 40% charged. Red LED flashes on the instrument housing laterally loaded below 20%. If the red box is on, the start device must be charged! ORANGE or RED lights illuminated, the device can not be used to jump-start! Device deactivated. Recharge soonest.

5 Connection / Operation in single steps:

5.1 Before starting aid

- Make sure the log book of the vehicle manufacturer if a jump start is permitted.
- Wear suitable protective clothing.
- Clean the terminals (battery terminals and cable connections) before the start.
- In open batteries: Fill in distilled water until the level specified by battery manufacturer is reached. For maintenance-free batteries, please follow exactly the instructions of the battery manufacturer.
- Make sure that the start device is fully charged. (Power LED Green)
- Connect to the battery - first the red terminal clamp to the positive terminal (+), then the black binding post (). The correct sequence!
- Make sure that the battery terminals are securely connected to the battery terminals before Press the start help function!
- Make sure that all electrical consumers of the vehicle are turned off or disconnected from the electrical system! Also include the interior, Motorrau or trunk lights, radio, navigation, driving and parking lights, hazard lights, ventilation, heated seats, etc.
- Make sure that the vehicle circuit is idle, no gear is engaged.
- The hand brake is on! The vehicle is secured against rolling.
- Take care that no clothing jewelry, body parts, charging cable caught in the vicinity of rotating engine parts.
- Upon completion of the jumpstart process, first disconnect the black jumper cable from the battery first and then disconnect the red cable from the battery. Observe the sequence!

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5.2 Position of the jumper device

The start device, as far as the cable length allows, connect the battery removed. The jumpstart Never place directly over or under the vehicle battery. From the battery leaking gas or fluids could damage the start device. Start device should not be placed on the engine block. Place the unit so that it can not fall or overturn.

5.3 jumpstart

Make sure before you use the-start device on the charging stand. The start device should be fully charged for the booster to achieve best possible results.

Check the charging stand at the start device: Press the switch. After the rainbow spectrum is gone, only the green LED is lit, press the SOS Switch for about 3 seconds. The illumination of the control function displays the charge level of the battery. (See above 4.3.) Turn off the power to the switch again.

The jumpstart success depends inter alia from the fact that the start device is loaded when used. In extreme cold thicken engine and transmission oil. This may mean that you need multiple attempts for a successful start. Even a healthy car battery is suffering from extreme cold. The vehicle battery can freeze at approximately -25 °. Never attempt to support a frozen starter battery via jumper. EXPLOSION! Similarly, the condition of the vehicle battery to be supported, as well as their current performance plays a major role. Dead or defective vehicle batteries can not replace the start device, but may still be successfully start. It can deliver despite its small size, considerable current strengths that allow a rule to start a car. (See the appendix to this manual see the overview, which start device for which vehicle)

In extremely cold outdoor temperatures (from -10 ° C), it is advisable to store the start device in a heated room and charge about 30 minutes before use. it is possible then that the vehicle can be started at low temperatures immediately. Close the start device as above described to the battery, turn on, as described above, the mode, wait about 3 minutes. Then try to start the first aid procedure. You will possibly need several attempts. Take no more than a maximum of 10 tests with a load! After the jump start charging device.

5.4 **Connecting the jumper cables:** Connect the plug with the jumper cables to the start device. Press the power (**ON OFF**) switch. The function key lights. After about 3 seconds the green LED is on (on a fully charged start device).

Connect the jumper cables to the unit with the supporting battery.

1 The red terminal of the booster unit to the **PLUS - (+)** pole of the battery.

2 The black clamp to the **NEGATIVE - terminal (-)** of the battery.

3 Make absolutely sure that the clamps of the jumper device as described previously, are connected to the battery. Never confuse the connections. This may result in damage to the unit and or jump-start the vehicle battery or the vehicle electrical system.

4 Press the power switch to the start device **ON**.

5 To activate the help function, press the Jump Start switch. The booster function is now enabled. Here, the short-circuit protection of the jumper device is disabled. Incorrect wiring (polarity reversal), the red LED lights up. In such case first of all correct the connection! Otherwise, in case of wrong connection, it will damage the booster unit. This is not covered in the warranty. Make sure before you activate the jump start function to the correct terminal of the booster unit.

6 Starting the vehicle If all connections are correct, the booster function is enabled, start the vehicle. Generally, the engine will start immediately. At very low temperatures (p.5.3), several tests may be necessary. is the jump start procedure was unsuccessful, turn off the start device OFF. First, check the connections. Turn the power back ON.

For example defective, dead battery, hold the JumpStart switch for 5 seconds. Thus, the jump start feature is turned on permanently. the short-circuit protection is deactivated. Therefore, you pay attention to the correct polarity! Repeat the jump start procedure. If the engine does not start, turn off the start device. Wait about 30 seconds until the next jump start attempt. This pause is necessary to regenerate the lithium battery jump start unit. Take then a restart operation of the vehicle. Once the vehicle engine is running under its own power, the engine running.

7 Remove the battery, the black jump lead from the first **MINUS - Pol (-)**.

8 Then remove the red wire from the battery. Note sequence. Turn off the start device by pressing the switch **OFF**.

5.5 **Changing the battery on the vehicle. For model JPR 9000, use of the cable:**

This cable is used for preservation of data stored in the vehicle (navigation, on-board computer, etc.) for example Battery change. Or for other reasons, the power supply of the vehicle is interrupted.

Connect the cable to the 12V Car Memory output of the booster unit. This is the side of the start device. Remove the protective cap on the device, insert the Memory Kable 12V plug in the 12V output.

Now open the OBDII Coverage

If the vehicle to which the power supply is to be interrupted. Plug the OBDII Plug the cable fits into the memory OBDII port. Press the POWER switch of the jumper device. Now the car is using the booster unit with max. 8A / 12V supplies. The vehicle battery without loss of wiring data to be changed. The loaded-start device, the vehicle for about 3.5 hours (JPR9000) with energy.

Smaller Devices about 3, 5 hours (JPR 4500), about 1 hour (JPR 2600), 40 min (JPR 1800).

When using a jumpstart our devices, JPR, we recommend to maintain the vehicle electrical system when battery replacement, use a suitable 12V power source such as a power station with at least 8A output power on the 12V output (if available). Please to see our disclaimer at the end of this manual.

5.6 Use of LED lighting

5.6.1 LED Emergency Working Light

On the lateral sides of the jumper device are light leaks, equipped with 2 white LED mounted. To activate the emergency work light, press the power (ON OFF) switch and then the switch with the lettering SIDE-LIGHT. Output light intensity per light output approximately 1,000 lux both outlets are switched simultaneously.

5.6.2 LED warning light

Under the functional control on the front of the jumper device is the LED warning light. The warning light illuminates when polarity, Falschanschuss automatically as a reference.

It is named after the POWER switch is pressed, the switch means SOS LIGHT on.

The red LED is turned off by 1x in constant light. The white LED will cycle through 2x activated as a constant light. With 3x press the switch, the red and white alternating flashing LED. Repeated actuation of the switch disables this feature. Despite the small size of the warning light, this is due to the high power LED, visible from afar in the dark. This switch also charging the status of the jumper device can be read. Turn on the unit with the **POWER** switch again.

5.7 load the booster unit

Upon delivery, the start device is partially loaded. Download it before the first use.

The start device must only be charged with the supplied charger.

The charger: power consumption in charge of the booster unit is initially approximately 20W, is reduced in the course of charging up to 7.5 W. Plug the charger into a 230V electrical outlet. Insert the charger plug into the side of the unit mounted charging jack labeled DC. The charging status is displayed in the function control.

The LED charge status display signals the respective charge state by a flashing LED. When charging is complete, the green LED in the function control. With green LED light-up the start device is ready to start. The start device after each jump-start operation at least until the yellow mark upload it to always be kept ready. Latest when the side of the unit mounted red LED labeled Low, the start device must be charged urgently to avoid damage to the battery. The booster function and the USB port are not available at this stage. Have you missed the charge of the star using the device and the low light is off, the lithium battery penetrate to load. Turn off the start device is NOT on, turn the LED fighting on NOT to avoid damage to the internal battery. The start device should be regularly charged at least every six months at least until the yellow mark. For longer periods of time connected to the charger is not recommended by the aging of the battery is not to speed. (S. Lagerung) to avoid.

5.8 Storage of the jumper device

Note that lithium batteries react sensitive to high temperatures. Store in a cool-start the device. Keep the unit away from heat sources or additional sunlight. The battery will age faster the higher their cell voltage, so it should be avoided to keep continually charged 100 percent of a Li battery. Cold storage is advantageous. The self-discharge of the lithium battery is only about 3% per month. We recommend storage at 15 ° C - 20 ° C at a load level of about 60% = YELLOW LED display. Lithium batteries should not be discharged below 2.5V per cell, even when stored. The electrolytes in the cell must not freeze, which occurs at a temperature around -25 ° C. Store or store because of the temperature sensitivity of the lithium batteries therefore not permanent in the emergency starter vehicle. Every 6 months to start using the device at least up to the mark YELLOW be loaded.

5.9 The USB output

The start device has a USB 2.0 output, 5V 2000mA max., The operation of loading or capable of many 5V USB products, with max. Power consumption of max. 2.0 A, is determined. The USB output is activated by pressing the POWER switch. He can power USB devices for many hours. The supply duration varies depending on the charge level of the booster unit, power and intensity of the connecting device. During a starting operation means, the supply of a USB device connected previously to be interrupted. Do not use the USB output at start. During charging, connect the jump start device to the charger, the USB output can be used. Use the USB output, even if you are not sure if the remaining battery jump start device is not in use for a longer appears too high. Charge your mobile phone, tablet PC or other USB devices to the battery level indicator shows the yellow range. (S.Lagerung) The start device with its high capacity battery can recharge devices, you also make it operational during the (holiday) drive USB compatible devices such as mobile phone, tablet PC, Kewego, or other USB. It can also be used as power source for use if your USB device on strike unexpectedly due to power shortage. It can be due to its compact dimensions and low weight, be a easily transportable, additional energy source.

5.10 Ttransportation inside a vehicle

If the device is transported in a vehicle, place it in a suitable location so that it can not begin to move with sudden speed and or direction changes. Keep or store the start device but not in the vehicle permanently. (See above storage)

6 Care and Cleaning

Check the technical safety of the jumper device, eg Damage the jumper cable or the housing. Wipe the device only with a dry cloth. Do not use liquid or chemical cleaners. Do not immerse the appliance in liquids. Never spill liquids on the unit.

7 Troubleshooting

With this start device you have purchased a product which has been designed according to state of the art and is reliable. However, there may be problems or disorders.

Therefore, we would like to describe here how to fix any problems: Troubleshooting

No function - If the red LED on the charger, the start device has been loaded?

- If the device is fully charged?
- Is it damaged?
- Check the mains socket of the charger, mains power is there?
- Is the jump start connector with the jumper cables correctly with the emergency starter connected?

Device has function solution
Jumpstart without success

- Is the start device is sufficiently charged?
- The vehicle ignition is on, this has been pressed?
- All electricity consumers in the vehicle?
- The connections to the vehicle properly with correct polarity? Check and correct if necessary
- Has the black terminal (black clip) contact, check correct if necessary
- Have the red terminal contact, check correct if necessary
- The ambient temperature outside the device limits (See technical data)

Other measures as described above are carried out exclusively by qualified personnel authorized by the manufacturer.

Caution! The start device may not replace a starter battery! It should not be a substitute for a starter battery used explosion! It may not be used in frozen battery (from about -25 ° C) explosion! Never connect to the vehicle body! Fire hazard for the vehicle electrical system!

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8 Warranty:

Apply axhess general warranty conditions without Your legal rights are affected. The warranty applies only to manufacturing or material defects. The warranty period is 24 months from date of purchase. For the built in lithium battery jump starter, the warranty is limited to 24 months from date of delivery. The required, battery maintenance as described here advancing, is required. Damaged batteries due to maintenance errors, are not included in the warranty.

9 Disposal:

Packing:
The packaging is reprocessed. Place the packaging material only in the corresponding Recycle - garbage.

Old appliance:
If the device one day is taken out of service permanently, run it according to the applicable laws / regulations, the designated collection points to. If in doubt, contact your local waste disposal or the appropriate municipal office.

10 Technical Data / Model	JPR 9000	JPR 4500	JPR 2600	JPR 1800	JPR 4500 6V
Integrated, high-quality lithium battery	√	√	√	√	√
Nominal battery capacity in mA	9000	4500	2600	1800	4500
Battery CCA	486	243	184	97	234
Continuous power	810	405	234	162	405
Jumpstart peak power max. A	1000	600	400	162	600
Charging time max. (Depending on battery status also shorter) hrs	12	8	8	8	8
Automatic shutdown after last Action min.	1	1	1	1	1
Automatic shutdown after jumpstart sec	5	5	5	5	5
Waiting time to attempt to jumpstart sequence sec	30	30	30	30	30
Number Jumpstart a fully charged battery up to	10	10	10	10	10
a temperature in ° C +	10	10	10	10	10
at up - 12 ° C Temperature	5	5	5	5	5
Battery performance	1600	800	350	250	800
Battery performance / life cycle to start aids *	√	√	√	√	√
Protective device PCM (Protektive Circuit Modul)	√	√	√	√	√
Overheating protection	√	√	√	√	√
Reverse polarity protection	√	√	√	√	√
Overcharge protection Battery back current	√	√	√	√	√
Battery back current protection	√	√	√	√	√
Ambient temperature jump start - short-term max. to ° C	-20	-20	-20	-20	-20
Ambient temperature Jump start - Normal ° C	-15 bis 45	-15 bis 45	-15 bis 45	-15 bis 45	-15 bis 45
Automatic shutdown at approx ° C	50	50	50	50	50
Ambient temperature, storage approx ° C	-10 bis 20°C	-10 bis 20°C	-10 bis 20°C	-10 bis 20°C	-10 bis 20°C
Jumper cable set Length mm / mm cable diameter	570 / 10	570 / 10	570 / 10	570 / 10	570 / 10
IP Class	20	20	20	20	20
Charger Input 100-204VAC 50/60Hz	√	√	√	√	√
Output 12VDC 1A Charger	√	√	√	√	√
Travel Charger Length approx 150 cm	√	√	√	√	√
USB Outlet 5V 2000mA	√	√	√	√	√
Unit dimensions (LxWxH) mm	190x160x45	192x135x45	192x135x45	192x135x45	192x135x45
Unit weight without cable kg	1,200	0,835	0,720	0,675	0,690
Accessories					
12V charging cable	√	√	√	optional	optional
Storage Bag	√	√	√	√	√
OBDII cable for power conservation when changing batteries	√	no	no	no	no
AC charger	√	√	√	√	√

* optimal battery maintenance and storage

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Starthilfegerät & USB Power Bank

Einsatzoptionen der JPR Modellvarianten nach Leistung

Profi Power "Power Punch" JPR 12V Modell	12V Quad Motorroller Motorrad		12V BENZINER				12V DIESEL			
			4 Zylinder bis 1500cm³		4 Zylinder 1500 cm³ bis 2500 cm³		4 und 6 Zylinder 2500cm³ bis 4000cm³		4 Zylinder 1400 cm³ bis 2000cm³		4 und 6 Zylinder 2000cm³ bis 3000cm³	
	Tief entladene Batterie	50% geladene Batterie	Tief entladene Batterie	50% geladene Batterie	Tief entladene Batterie	50% geladene Batterie	Tief entladene Batterie	50% geladene Batterie	Tief entladene Batterie	50% geladene Batterie	Tief entladene Batterie	50% geladene Batterie
JPR 9000 (Max Power 1000 A)	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
JPR 4500 (Max Power 600 A)	OK	OK	OK	OK	OK	OK		OK		OK	Nein	OK
JPR 2600 (Max Power 400 A)	OK	OK	OK	OK		OK	Nein		Nein		Nein	Nein
JPR 1800 (Max Power 280 A)	OK	OK		OK	Nein		Nein	Nein	Nein	Nein	Nein	Nein
JPR 4500 / SV (Max Power 600 A) SV	OK SV	OK SV	OK SV	OK SV	OK SV	OK SV	SV	OK SV	SV	OK SV	Nein	OK SV

OK	JPR hat ausreichend Power das Fahrzeug zu starten
evtl.	JPR kann Startunterstützung geben, abhängig vom Zustand der Empfängerbatterie
Nein	JPR hat nicht genug Power das Fahrzeug zu starten

Ergänzender Hinweis: **Verwendung einer Power Station zur Spannungsversorgung / Spannungserhaltung eines Fahrzeuges bei Batteriewechsel.** Verbinden Sie ein 12V auf 12V Kabel mit der Power Station (12V Ausgang) und der Bordsteckdose oder Zigarettenanzünder-Buchse des Fahrzeuges. Schalten Sie die Power Station ein, Freigabe Stromversorgung. Die Power Station muss voll geladen sein und über einen separaten 12V Ausgang verfügen. Geeignete Power Stationen sehen Sie bitte unter **www.axhess.de**

11 Konformität

Dieses Produkt erfüllt die Anforderungen der geltenden europäischen und nationalen Richtlinien. Die Konformität wurde nachgewiesen, die entsprechende Erklärung und Dokumente sind beim Hersteller hinterlegt.

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AUSTRALIA

Patents Act

IN THE MATTER of Australia Patent Application No. 2015258229 in the name of THE NOCO COMPANY

- and -

A Notice of matters affecting validity

Annexure SL-4

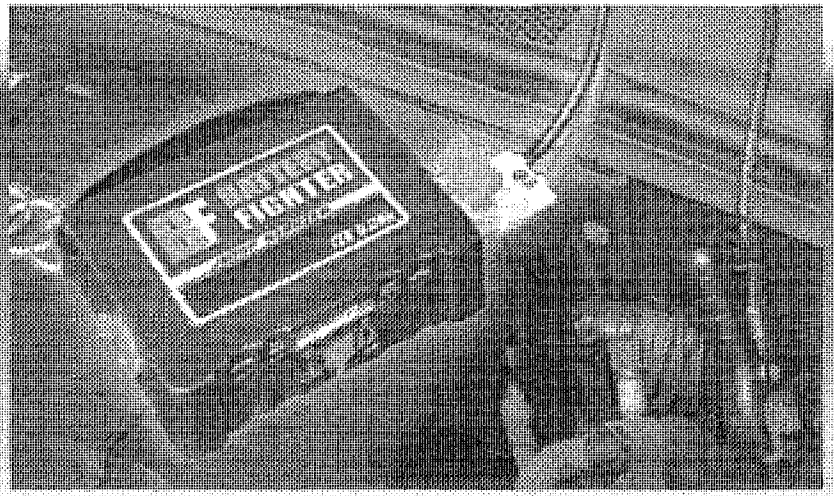
MiniJump Starter

JPR Series M Version Presentation

Updated 25 Dec 2013

Product Presentation

1. Why did JPR series to be developed, how it can replace the old traditional Jump starter ?
2. Comparison of old and new Jump Start
3. Benchmark Comparison
4. Distribution of market demand
5. Features/Function / Benefits
6. Family Chart
7. Capability Chart



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Battery Fighter - Mini Jump Starter Series
1,800mAh - 12V
2,600mAh - 12V
4,500mAh - 12V
9,000mAh - 12V
9,000mAh - 24V
4,500mAh - 6V is also available

Battery Fisher - Mini Jump Starter Series

Model No.	JPR1800M	JPR2600M	JPR4500M	JPR9000M	JPR9024M
Application	Jump Start 12V Automotive Starting Batteries				24V
Battery Type	Lithium-Ion Polymer				
Battery Capacity	1.8A	2.6A	4.5A	9.0A	9.0A
Cranking Ampere	162A	234A	405A	810A	810A
USB 2.0 Outlet	5V / 2.0A Maximum				
DC12V Outlet	No	No	No	7.5A Max.	No
Car Memory Saver	No	No	No	Yes	No
Size (mm)	192 x 135 x 45			192 x 160 x 45	227 x 192 x 67
Weight (kg)	0.64	0.66	0.80	1.24	1.95

Why did JPR be developed, how it can replace the old traditional Jumpstart?

Review of Traditional Jumpstart

- Huge market demand for Jumpstart
- Unreliable quality for traditional Jumpstart
- High research cost and difficult to improve
- Poor assembly and battery life issue
- Traditional Jumpstart is not suitable for small car
- Safety issue due to the high current

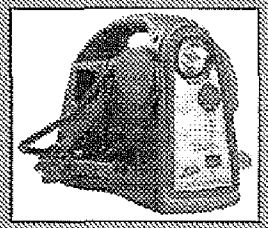
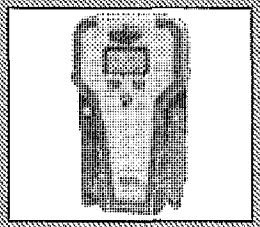
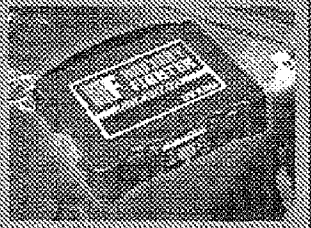
Potential of JPR M version Mini-Jumpstart

- New concept of Car engine cranking, stronger output power, and real crank power for car engine lighting, people are looking for the quality products has demanded in market.
- the car battery frequently, so Jumpstart is essential for driver in emergency case.
- light weight and compact size, able to store in car compartment or back trunk, it is suitable to bring along in long journey. Jump the car in anywhere
- cranking up a wide range of vehicles up to 10,000 cc diesel engines.
- enhanced protection features, recharges less than 30 minutes, starts more than 300 times in surge
- extends the usage as the mobile bank power for most of smart phone, tablet PC, such as I-Pad, I-phones, we just need the simply turning knob for providing a possible maximum power output
- area

Comparison of Traditional and New Jumpstart

Item	Traditional Jumpstart	JPR series
Light weight	☒	☑
Compact size	☒	☑
Long life span	☒	☑
Long discharge rate	☒	☑
Short charge time	☒	☑
Eco care	☒	☑
Short production lead time	☒	☑
Low freight cost	☒	☑
Easy storage	☒	☑
Travelling flexibility	☒	☑
USB 5.0V 2.0A	☒	☑
Less competition	☒	☑
Low return rate	☒	☑
Profitable	☒	☑

Benchmark comparison

Brand and model No. / Advantage	ATD ATD5900	STANLEY LI-1000	Battery Fighter JPR-9000M
Product images			
Battery Type	LiFe PO4	Li-Po	Li-Po
Battery Capacity	8.0Amp	7.5Amp	9.0Amp
Max cranking power	700 Amp.	not stated	1000 Amp
Min. voltage remained in car battery	not less than 6V	not stated	min. 2V
USB 5.0V	5.0V 2.0A	5.0V 0.5A	5.0V 2.0A
work Light	Yes	Yes	Yes
Car Memory Saver	No	No	Yes
12VDC power outlet	Yes	No	Yes
Weight	3.5 kgs	2.2 kgs	1.24 kgs
Dimension	330 x 250 x 270 mm	300 x 178 x 109 mm	192 x 160 x 45 mm

Distribution of Market Demand
World-wide Patients
Asia
23%
Europe
25%
Other
12%
North America
30%
2006 Sales / Year

Features/Functions/Benefits

- Auto power shut-off for energy saving
- Mighty cranking power for engine start
- Built-in LED work light and road emergency light
- Up to 10 tanks for most of petroleum engine
- Rechargeable via AC adapter or 12Volt car lighter plug
- Universal USB output with multi-protection
- Can start most smartphones, smart pads, digital cameras, smartwatches and MP3 players
- Easy carry, compact size able to store in car compartment
- Car memory saver for 3.0Amp version
- Over voltage protection
- Over discharge protection
- Car battery bypass
- Extra Long battery stand by
- Long battery life span

Features & Accessories

USB 2.0 outlet (DC 5V / 2A)

Rainbow Bar

Battery Indicator

Side Light

Family Chart

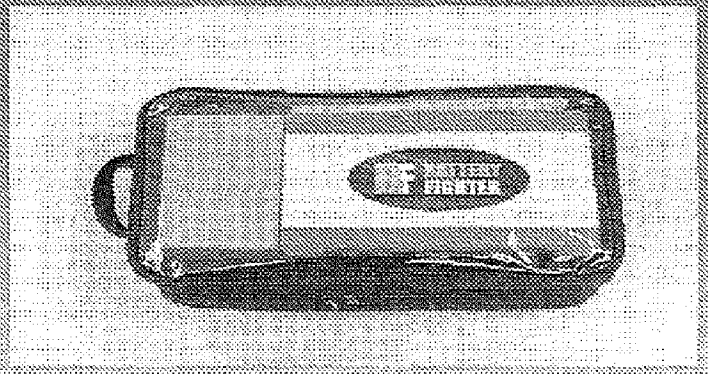
Mini Jump Start Model No.	MOTOR BIKE		PETROLEUM ENGINE CAR								DIESEL ENGINE CAR			
	<1000cc Engine		4 Cylinder (<2200cc)		4 Cylinder (<3000cc)		6 Cylinder (<4000cc)		8 Cylinder (<6000cc)		4 Cylinder (<2000cc)		6 Cylinder (<3500cc)	
	Dead Battery	50% Full Battery	Dead Battery	50% Full Battery	Dead Battery	50% Full Battery	Dead Battery	50% Full Battery	Dead Battery	50% Full Battery	Dead Battery	50% Full Battery	Dead Battery	50% Full Battery
JPR3000M (Max Power 316A)	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
JPR4500M (Max Power 465A)	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	FINE	GOOD	NO	FINE	FINE	GOOD	NO	FINE
JPR2600M (Max Power 234A)	GOOD	GOOD	GOOD	GOOD	FINE	GOOD	NO	FINE	NO	NO	NO	FINE	NO	NO
JPR1800M (Max Power 182A)	GOOD	GOOD	FINE	GOOD	NO	FINE	NO	NO	NO	NO	NO	NO	NO	NO

Please click the following link for demonstration :

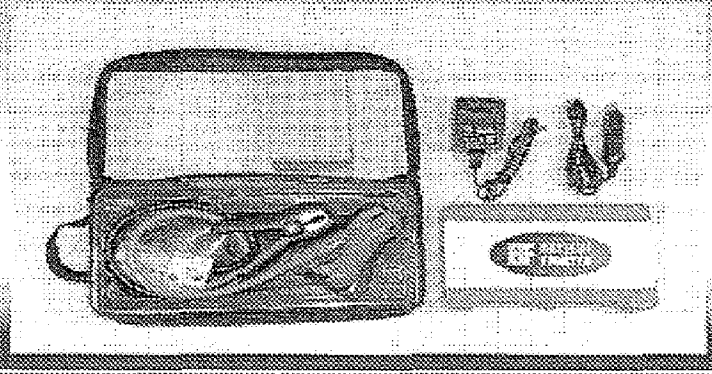
http://www.youtube.com/watch?v=IINS0hRIRwY

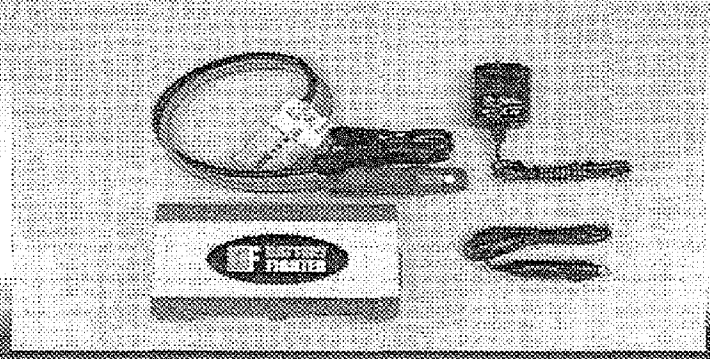
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Standard Packing Information - 1/2





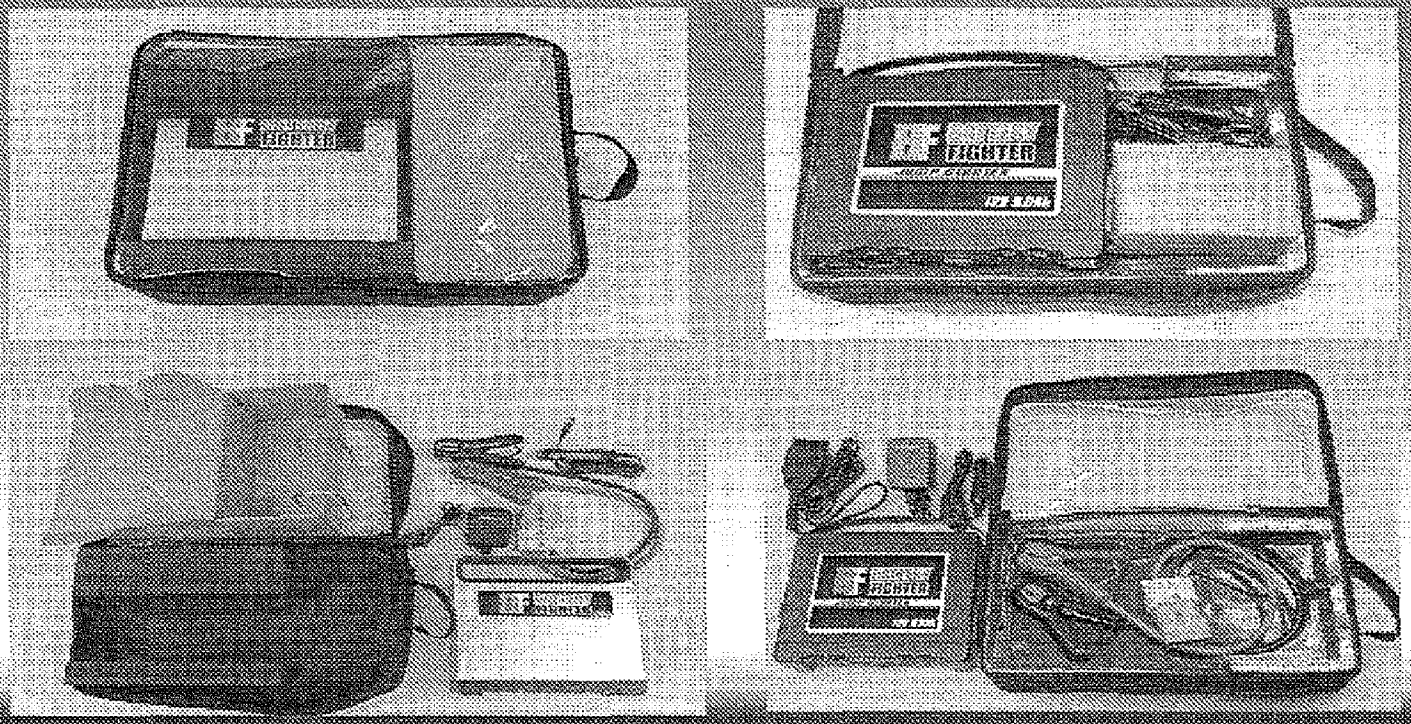




Model No.	Master Carton Size	Qty / Carton	Gross Weight
JPR1800M	32 x 29.5 x 34.5 cm	6 pcs	8.00 kg
JRP2600M	32 x 29.5 x 34.5 cm	6 pcs	8.30 kg
JPR4500M	32 x 29.5 x 34.5 cm	6 pcs	9.60 kg

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Standard Packing Information – 2/2



Model No.	Master Carton Size	Qty / Carton	Gross Weight
JPR9000M	45.5 x 33 x 30.6 cm	6 pcs	14.50 kg
JRP9024M	53.5 x 35 x 23.5 cm	4 pcs	14.20 kg

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Optional Packaging – Color Box

JPR900M

JPR450M

Capability Chart
BF BATTERY FIGHTER
High Efficiency & Reliability
Lithium Jump-Starter
Battery Capacity
1800mAh
10000cc
Petrol Engine
Aeroplane
Battery Capacity
3000mAh
2000cc
Petrol Engine
Battery Capacity
4500mAh
4000cc
Petrol Engine
Diesel Engine
Battery Capacity
9000mAh
6000cc
Petrol Engine
3500cc
Diesel Engine
Battery Capacity
9000mAh
13000cc
24V
JPR12-00M
JPR26-00M
JPR45-00M
JPR60-00M
JPR02-24M

Car Battery Management
Specialist
Save Battery
Test Battery
Maintain Battery

B FIGHTER

AUSTRALIA

Patents Act

IN THE MATTER of Australia Patent Application No. 2015258229 in the name of THE NOCO COMPANY

- and -

A Notice of matters affecting validity

Annexure SL-5

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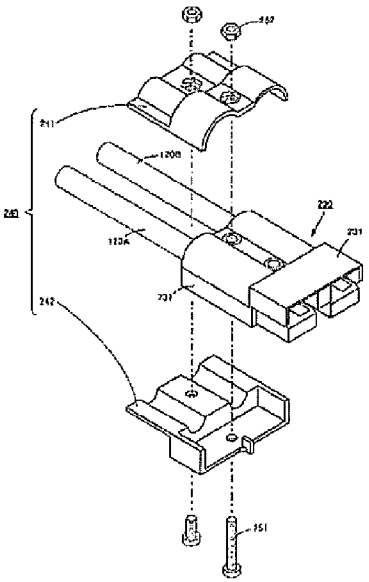
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最終頁に続く

(54)【考案の名称】可搬型補助給電装置用のブースタケーブル

(57)【要約】　(修正有)
【課題】ジャンプスタータとしての機能を有し、小型軽量で携帯性に優れた可搬型補助給電装置用のブースタケーブルであって、比較的激しい屈曲運動に耐え、心線の断線を引き起こす虞のないブースタケーブルを提供する。
【解決手段】２本の接続ケーブル１２０Ａ，１２０Ｂを可搬型補助給電装置に接続するための雄雌同体構造の２極コネクタ２３０にコネクタカバー２４０を取り付け、２極コネクタ２３０から導出される２本の接続ケーブルの導出部分をコネクタカバー２４０により固定する。ブースタケーブルを掴んで補助給電装置を持ち上げそのまま移動した場合、強い引っ張り力が加わり、繰り返し屈曲されるケーブルの導出部分がコネクタカバーにより挟持保護されるので、心線に断線の虞がなくなる。
【選択図】図６



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【実用新案登録請求の範囲】
【請求項１】
ジャンプスタータとしての機能を有する可搬型補助給電装置用のブースタケーブルであって、
２本の接続ケーブルと、
上記２本の接続ケーブルの一端部に接続された２つのジャンプスタータ用鰐口クリップと、
上記２本の接続ケーブルの他端端部に設けられ、上記２本の接続ケーブルを上記可搬型補助給電装置に接続するための雄雌同体構造の２極コネクタと、
上記２極コネクタに取り付けられ、上記２本の接続ケーブルの上記２極コネクタから導出される導出部分を固定するコネクタカバーと
を備える可搬型補助給電装置用のブースタケーブル。
【請求項２】
上記２極コネクタは、上記接続ケーブルに接続された接触子が挿入される接触子挿入部と、上記接触子に接続された上記接続ケーブルを覆うケーブル導出部とが設けられたコネクタハウジングを有し、
上記コネクタカバーは、上記接続ケーブルに沿った面で二分割された上ハーフと下ハーフからなり、上記上ハーフと下ハーフにより構成される上記コネクタハウジングの上記ケーブル導出部を覆う取り付け部と、上記２極コネクタのハウジングから導出された上記２本の接続ケーブルを挟持するケーブル支持部と有し、上記取り付け部において上記ケーブル導出部に一体的に組み付け固定されることを特徴とする請求項１記載の可搬型補助給電装置用のブースタケーブル。
【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可搬型補助給電装置用のブースタケーブルに関する。
【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。
【０００５】

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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。

【０００６】

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。

【先行技術文献】

【特許文献】

【０００７】

【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】

【０００８】

本件出願人は、上述の如き従来の実情に鑑み、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先に提案し、提供している。

【０００９】

ところで、上記車両用補助給電装置の場合、小型軽量で携帯性に優れることから、当該給電装置にブースタケーブルを接続した状態で、上記ブースタケーブルを掴んで当該給電装置を持ち上げそのまま移動するユーザが多いことが判明した。

【００１０】

上記ブースタケーブルを掴んで上記車両用補助給電装置を持ち上げそのまま移動した場合、上記ブースタケーブルは、上記車両用補助給電装置の重量により強い引っ張り力が加わった状態で、当該ブースタケーブルに設けられたコネクタの近傍において繰り返し屈曲されることになり、心線に断線の虞が生じる。

【００１１】

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、小型軽量で携帯性に優れた可搬型補助給電装置用のブースタケーブルであって、比較的激しい屈曲運動に耐え、心線の断線を引き起こす虞のないブースタケーブルを提供することにある。

【００１２】

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】

【００１３】

本考案は、ジャンプスタータとしての機能を有する可搬型補助給電装置用のブースタケーブルであって、２本の接続ケーブルと、上記２本の接続ケーブルの一端部に接続された２つのジャンプスタータ用鰐口クリップと、上記２本の接続ケーブルの他端端部に設けられ、上記２本の接続ケーブルを上記可搬型補助給電装置に接続するための雄雌同体構造の

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２極コネクタと、上記２極コネクタに取り付けられ、上記２本の接続ケーブルの上記２極コネクタから導出される導出部分を固定するコネクタカバーとを備えることを特徴とする。

【００１４】

本考案に係る可搬型補助給電装置用のブースタケーブルにおいて、上記２極コネクタは、上記接続ケーブルに接続された接触子が挿入される接触子挿入部と、上記接触子に接続された上記接続ケーブルを覆うケーブル導出部とが設けられたコネクタハウジングを有し、上記コネクタカバーは、上記接続ケーブルに沿った面で二分割された上ハーフと下ハーフからなり、上記上ハーフと下ハーフにより構成される上記コネクタハウジングの上記ケーブル導出部を覆う取り付け部と、上記２極コネクタのハウジングから導出された上記２本の接続ケーブルを挟持するケーブル支持部と有し、上記取り付け部において上記ケーブル導出部に一体的に組み付け固定されるものとすることができる。

【考案の効果】

【００１５】

本考案によれば、ジャンプスタータとしての機能を有し、小型軽量で携帯性に優れた可搬型補助給電装置用のブースタケーブルであって、比較的激しい屈曲運動に耐え、心線の断線を引き起こす虞のないブースタケーブルを提供することにある。

【図面の簡単な説明】

【００１６】

【図１】本考案を適用したブースタケーブルを接続した車両用補助給電装置を前方側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の電気的な構成を示すブロック図である。

【図３】２極コネクタにコネクタカバーを取り付けた状態を示すブースタケーブルの平面図である。

【図４】上記ブースタケーブルに接続されている２極コネクタのコネクタハウジングと接触子を示す平面図である。

【図５】上記２極コネクタの接続状態を示す要部縦断面である。

【図６】上記２極コネクタに取り付けられるコネクタカバーの分解斜視図である。

【図７】上記２極コネクタに上記コネクタカバーを取り付けた状態を示す外観斜視図であり、（Ａ）は上面側から見た状態を示し、（Ｂ）は上記２極コネクタを裏返した状態を示している。

【考案を実施するための形態】

【００１７】

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。

【００１８】

本考案は、例えば図１に示すように、車両用補助給電装置１００に接続されるブースタケーブル２００に適用される。

上記車両用補助給電装置１００は、ジャンプスタータとしての機能を有する可搬型補助給電装置であって、図１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２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を備えている。

【００１９】

そして、この車両用補助給電装置１００では、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２０が上記筐体１０の左側面壁に設置されている。このＤＣ入力端子２０には、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

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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。

【００２０】

また、この車両用補助給電装置１００は、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。

【００２１】

上記第１のＤＣ出力端子３１は、ブースタケーブル２００が雄雌同体構造の所謂アンダーソンコネクタを用いたプラグを介して外部接続されるジャックからなる。

【００２２】

上記第２のＤＣ出力端子３２は、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。

【００２３】

上記第３のＤＣ出力端子３３は、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。

【００２４】

上記第４のＤＣ出力端子３４は、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。

【００２５】

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、上記筐体１０の右側面壁に設置されている。また、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。

【００２６】

また、この車両用補助給電装置１００は、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、上記筐体１０の正面壁１３に設置されている。

【００２７】

さらに、この車両用補助給電装置１００は、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。

【００２８】

上記充電量表示部５１及び一対の非常用警告灯５３Ａ，５３Ｂは、上記筐体１０の正面壁１３に設置されている。

【００２９】

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。

【００３０】

また、上記バッテリロー表示灯５２は、上記筐体１０の右側面壁に設置されている。

【００３１】

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により制御されて、上記リチウムイオン蓄電池２の電圧が所定値まで低下すると点滅状態あるいは点灯

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状態となることにより、バッテリロー表示灯として機能する。

【００３２】

また、上記一対の側面照明灯５４Ａ，５４Ｂは、それぞれ直線状に配置された複数の白色ＬＥＤにより構成されている。

【００３３】

このような構成の車両用補助給電装置１００において、上記筐体１０内に設置された制御回路部４は、上記充電回路部１の動作を制御する充電制御部、上記出力回路部１の動作を制御する出力制御部、充電量表示部５１等の動作を制御する表示制御部として機能するマイクロコンピュータからなり、内部接続された上記充電回路部１及び出力回路部３の動作を次のように制御する。

【００３４】

ここで、この車両用補助給電装置１００に接続される充電用の給電ケーブルとしては、家庭用電源から充電用の１２Ｖの電源供給するためのＡＣアダプタケーブルと、自動車バッテリから例えば１２Ｖの電源供給を供給するためのシガープラグケーブルが準備されている。

【００３５】

そして、上記車両用補助給電装置１００における上記制御回路部４は、上記ＤＣ入力端子２０にＡＣアダプタケーブル又はシガープラグケーブルが外部接続され、家庭用電源又は自動車バッテリから充電用の電源が供給されることにより、上記ＤＣ入力端子２０に所定電圧値以上の電圧が印加されたことを検出すると、充電モードの制御を行う。

【００３６】

この充電モードの制御において、上記制御回路部４は、充電制御部により上記充電回路部１の動作を制御して、上記充電回路部１を介して上記リチウムイオン蓄電池２を充電し、上記リチウムイオン蓄電池２が満充電まで充電されると過充電保護回路を機能させ、充電を終了する。

【００３７】

また、上記制御回路部４は、充電制御中には、出力制御部により上記出力回路部３の動作を制御して、上記出力回路部３から外部への電源供給を禁止する。

【００３８】

さらに、上記制御回路部４は、充電制御中には、表示制御部により上記充電量表示部５１の動作を制御して、上記充電量表示部５１を制御して充電量をバー表示する。

【００３９】

上記充電量表示部５１は、上記制御回路部４により動作が制御されて、未充電状態から、バッテリ残量２０％以下を示す赤色点状態、バッテリ残量２０％から３０％を示す赤色点灯、バッテリ残量３０％から４０％を示す橙色点滅状態、バッテリ残量４０％から７０％を示す黄色点灯状態、バッテリ残量７０％から１００％を示す緑色点灯状態へと、満充電状態まで充電が進むに従って、点灯状態が順次変化する。

【００４０】

上記車両用補助給電装置１００は、上記リチウムイオン蓄電池２を充電した状態で、可搬型ジャンプスタータとして機能し、また、屋外で電気機器を使用するためにポータブル電源装置として使用することができる。

【００４１】

ここで、この車両用補助給電装置１００には、上記ジャンプスタート用の第１のＤＣ出力端子３１を構成している雄雌同体構造の所謂アンダーソンコネクタからなるジャック１３０にプラグ２３０を介して外部接続されるジャンプスタート用のブースタケーブル２００が準備されている。

【００４２】

上記ブースタケーブル２００は、図３に示すように、２本の接続ケーブルケーブル２１０Ａ、２１０Ｂの一端部に接続された２つのジャンプスタータ用鰐口クリップ２２０Ａ、２２０Ｂと、上記２本の接続ケーブルケーブル２１０Ａ、２１０Ｂの他端端部に設けられ

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、上記２本の接続ケーブルケーブル２１０Ａ、２１０Ｂを上記車両用補助給電装置１００に接続するための雄雌同体構造の２極コネクタ２３０と、上記２極コネクタ２３０に取り付けられ、上記２本の接続ケーブル２１０Ａ、２１０Ｂの上記２極コネクタ２３０から導出される導出部分を固定するコネクタカバー２４０とを備える。

【００４３】

上記２極コネクタ２３０は、図４に示すように、上記接続ケーブル２１０Ａ、２１０Ｂに接続された接触子２３５Ａ，２３５Ｂが挿入される接触子挿入部２３１と、上記接触子に接続された上記接続ケーブル２１０Ａ、２１０Ｂを覆うケーブル導出部２３２とが設けられ、図５に接続状態の要部縦断面図を示すように、雄雌の区別がないにも拘わらず誤接続を物理的に不可能とした構造のコネクタハウジング２３３を有する雄雌同体構造の所謂アンダーソンコネクタからなる。

【００４４】

また、上記コネクタカバー２４０は、図６に示すように、上記接続ケーブル２１０Ａ、２１０Ｂに沿った面で二分割された上ハーフ２４１と下ハーフ２４２からなり、上記上ハーフ２４１と下ハーフ２４２により構成される上記コネクタハウジング２３３の上記ケーブル導出部２３２を覆う取り付け部２４４と、上記コネクタハウジング２３３から導出された上記２本の接続ケーブル２１０Ａ、２１０Ｂを挟持するケーブル支持部２４５と有する。そして、上記コネクタカバーは、図７の（Ａ），（Ｂ）に示すように、上記取り付け部において上ハーフ２４１と下ハーフ２４２が上記ケーブル導出部２３２にネジ２５１とナット２５２により一体的に組み付け固定される。

【００４５】

このような構造のコネクタカバー２４０を上記２極コネクタ２３０のケーブル導出部２３２に取り付けた上記ブースタケーブル２００では、上記２極コネクタ２３０のケーブル導出部２３２から導出された上記２本の接続ケーブルケーブル２１０Ａ、２１０Ｂの導出部分が上記コネクタカバー２４０のケーブル支持部２４５により挟持されるので、比較的激しい屈曲運動に耐え、心線の断線を引き起こす虞がなくなる。

【００４６】

そして、この車両用補助給電装置１００は、上記ブースタケーブル２００を介してジャンプスタートさせる車両の車載バッテリに接続され、次のようにしてジャンプスータとして使用される。

【００４７】

すなわち、この車両用補助給電装置１００をジャンプスータとして使用する場合、当該車両用補助給電装置１００の電源スイッチ４１がＯＦＦの状態で、上記ジャンプスタート用のブースタケーブル２００がユーザにより上記第１のＤＣ出力端子３１に接続される。

【００４８】

上記車両用補助給電装置１００のユーザは、上記充電量表示部５１を構成している複数のＬＥＤが全て消灯していることで、電源スイッチ４１がＯＦＦの状態であることを確認することができる。

【００４９】

次に、ユーザが電源スイッチ４１を押して電源ＯＮにすると、この車両用補助給電装置１００の制御回路部４は、電源ＯＮを検知して上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を緑色点灯状態とする。上記充電量表示部５１は、緑色点灯により電源ＯＮを表示するパワーランプとして機能する。

【００５０】

そして、この電源ＯＮ状態でユーザがジャンプスタートスイッチ４２を押してジャンプスタートすると、この車両用補助給電装置１００の制御回路部４は、上記ジャンプスタートスイッチ４２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う。

【００５１】

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このジャンプスタートモードの制御において、上記制御回路部４は、上記ジャンプスタート用の第１のＤＣ出力端子３１にブースタケーブル２００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、上記出力制御部により出力回路部３の動作を制御し、上記リチウムイオン蓄電池２をジャンプスタート用の電源として上記出力回路部３を介して上記ジャンプスタート用の第１のＤＣ出力端子３１に接続するとともに、上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を黄色点灯状態とする。上記充電量表示部５１は、黄色点灯により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機能する。このジャンプスタートモードでは、上記充電量表示部５１は、緑色点灯により電源ＯＮを表示するとともに黄色点灯によりジャンプスタートを表示している。

【００５２】

このジャンプスタートモードの状態で、ユーザは、この車両用補助給電装置１００が接続されている上記車載バッテリを搭載した自動車のエンジンを始動させるジャンプスタートを行うことができる。

【００５３】

ここで、従来の一般的な鉛蓄電池を用いた１２Ｖ／４．５Ａｈ程度の容量のジャンプスタータは、本体重量が５ｋｇ～７ｋｇ程度あり、満充電電状態での始動可能回数は平均５回程度であったのに対し、本考案を適用した上記車両用補助給電装置１００は、例えば３０ｍｍ×１５０ｍｍ×１００ｍｍ（縦×幅×奥行き）の大きさの筐体１０内に例えば３．６Ｖの充電式リチウムイオンを３個直列接続して実装することにより、重さ８３０ｇ程度で３０００ｃｃまでのガソリン乗用車に対応する１２Ｖ／４．５Ａｈの容量の可搬型ジャンプスタータとして機能し、小型軽量で、しかも、満充電電状態での始動可能回数も１０～２０回程度に向上している。

【００５４】

また、上記車両用補助給電装置１００は、例えば４５ｍｍ×１９０ｍｍ×１８０ｍｍ（縦×幅×奥行き）の大きさの筐体１０を用いて、２倍の６個の充電式リチウムイオンを実装することにより、重さ１３００ｇ程度でガソリン乗用車全般及び３０００ｃｃ４気筒までのディーゼル車に対応する１２Ｖ／９Ａｈの容量の可搬型ジャンプスタータとして機能する。

【００５５】

なお、この車両用補助給電装置１００における上記制御回路部４は、上記電源ＯＮ状態でユーザがジャンプスタートスイッチ４２を長時間操作すなわち例えば５秒以上長押しすると、チャージブーストモードの制御状態となり、上記リチウムイオン蓄電池２に充電されている電気を１度に放出するように、上記出力制御部により上記出力回路部３の動作を制御する。このチャージブーストモードの制御状態では、上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を黄色点灯状態とする。すなわち、上記充電量表示部５１は、黄色点灯によりチャージブーストモードを表示するチャージブーストモードとして機能する。このチャージブーストモードは、車載バッテリが深放電状態になっている場合に使用される。

【００５６】

また、この車両用補助給電装置１００は、上述の如く１２Ｖ／４．５Ａｈの容量のもので重さ８３０ｇ程度、１２Ｖ／９Ａｈの容量のものでも１３００ｇ程度の重量で小型軽量であるので、可搬性に優れ、しかも、上記ジャンプスタート用の第１のＤＣ出力端子３１の他に、屋外で電気機器を使用するための外部接続用の第２乃至第４のＤＣ出力端子３２～３４を備えているので、次のようにポータブル電源として使用することができる。

【００５７】

すなわち、この車両用補助給電装置１００において、上記第２のＤＣ出力端子３２には、ＰＣ電源ケーブルを介してＰＣを外部接続することができる。

【００５８】

また、この車両用補助給電装置１００において、上記第３のＤＣ出力端子３３には、Ｕ

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ＳＢ（Universal Serial Bus）で給電可能な携帯音楽プレーヤ等の電子機器を市販のＵＳＢケーブルを介して接続することができる。

【００５９】

また、この車両用補助給電装置１００は、上記第４のＤＣ出力端子３４に外部接続されるシガーケーブルを介して車載対応の電気機器を駆動するポータブル電源として機能する。

さらに、この車両用補助給電装置１００は、上記第４のＤＣ出力端子３４に外部接続されるシガーケーブルを介して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。

【００６０】

すなわち、この車両用補助給電装置１００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、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となっている。さらに、この車両用補助給電装置１００は、上述の如きジャンプスタータやポータブル電源として機能するばかりでなく、非常時に使用する警告表示灯や照明灯として機能する。

【００６１】

以上説明した本考案の実施の形態のように、可搬性に優れた小型軽量でジャンプスタータとしての機能を有する車両用補助給電装置１００に接続される可搬型補助給電装置用のブースタケーブル２００では、上記２極コネクタ２３０のケーブル導出部２３２から導出された上記２本の接続ケーブルケーブル２１０Ａ、２１０Ｂの導出部分が上記コネクタカバー２４０のケーブル支持部２４５により挟持されるので、比較的激しい屈曲運動に耐え、心線の断線を引き起こす虞がなく、所期の目的を達成することができる。

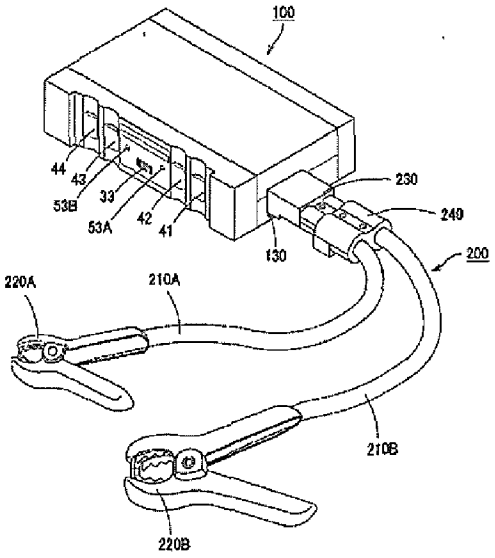
【符号の説明】

【００６２】

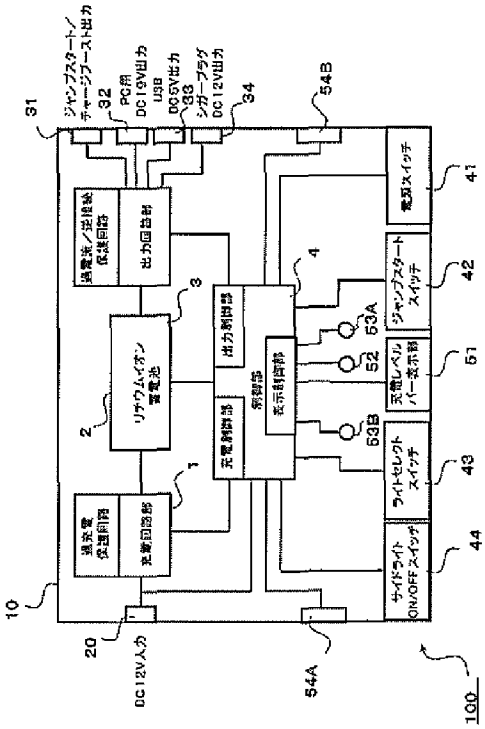
１　充電回路部、２　リチウムイオン蓄電池、３　出力回路部、４　制御回路部、１０　筐体、１１　左側面壁、１２　右側面壁、１３　正面壁、２０　ＤＣ入力端子、３１　第１のＤＣ出力端子、３２　第２のＤＣ出力端子、３３　第３のＤＣ出力端子、３４　第４のＤＣ出力端子、４１　電源スイッチ、４２　ジャンプスタートスイッチ、４３　ライトセレクトスイッチ、４４　サイドライト・オン／オフ・スイッチ、５１　充電量表示部、５２　バッテリロー表示灯、５３Ａ，５３Ｂ　非常用警告灯、５４Ａ，５４Ｂ　側面照明灯、１００　車両用補助給電装置、２００　ブースタケーブル、２１０Ａ，２１０Ｂ　ケーブル、２２０Ａ，２２０Ｂ　ジャンプスタータ用鰐口クリップ、２３０　２極コネクタ、２３１　接触子挿入部、２３２　ケーブル導出部、２３３　コネクタハウジング、２３５Ａ，２３５Ｂ　接触子、２４０　コネクタカバー、２４１　上ハーフ、２４２　下ハーフ、２４４　取り付け部、２４５　ケーブル支持部

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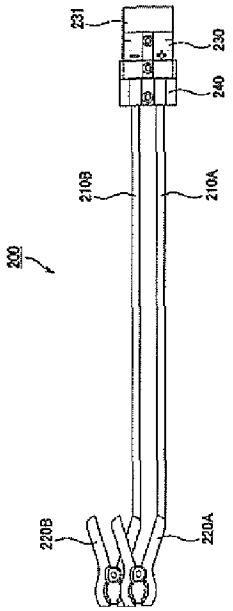
【図１】


100
44
43
53B
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53A
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41
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240
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200
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210B
220B

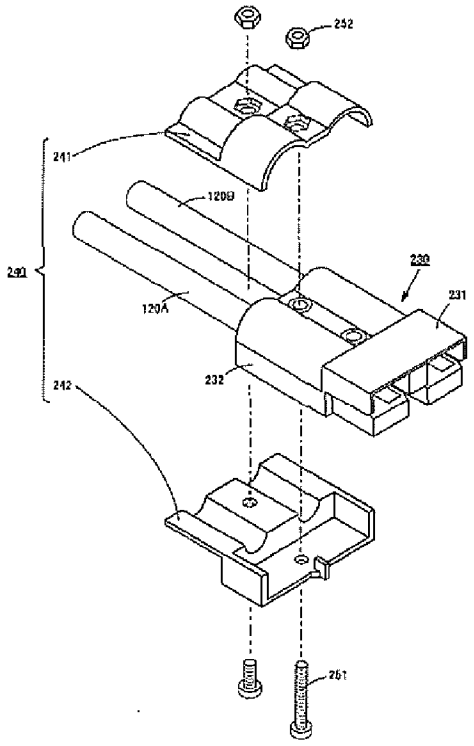
【図２】


31
32
33
34
54B
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42
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44
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53A
52
53B
4
3
2
1
10
20
54A
100

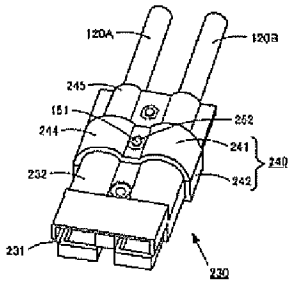
【図３】


231
230
240
210B
210A
200
220B
220A

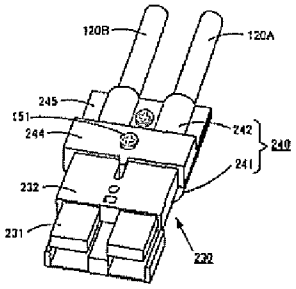
【図６】


252
241
120B
240
230
231
120A
232
242
251

【図７】

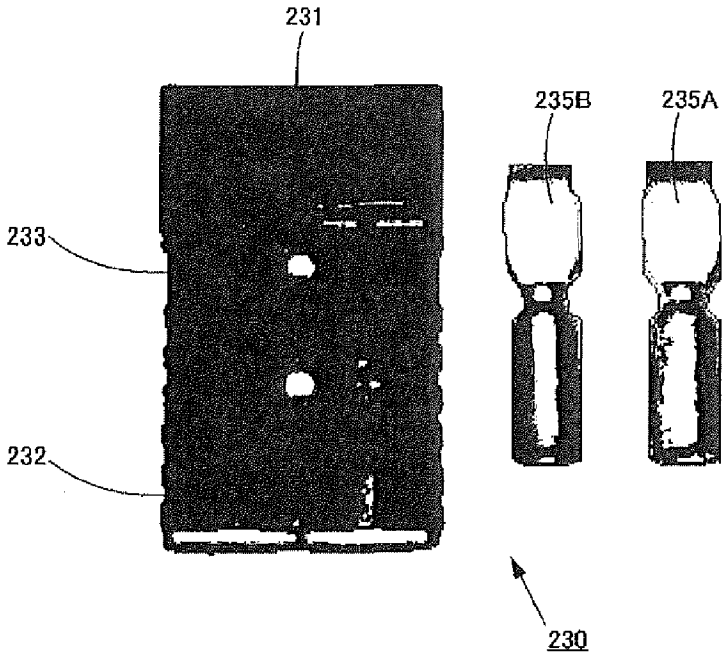

120A
120B
245
151
244
252
241
240
242
232
231
230

(A)

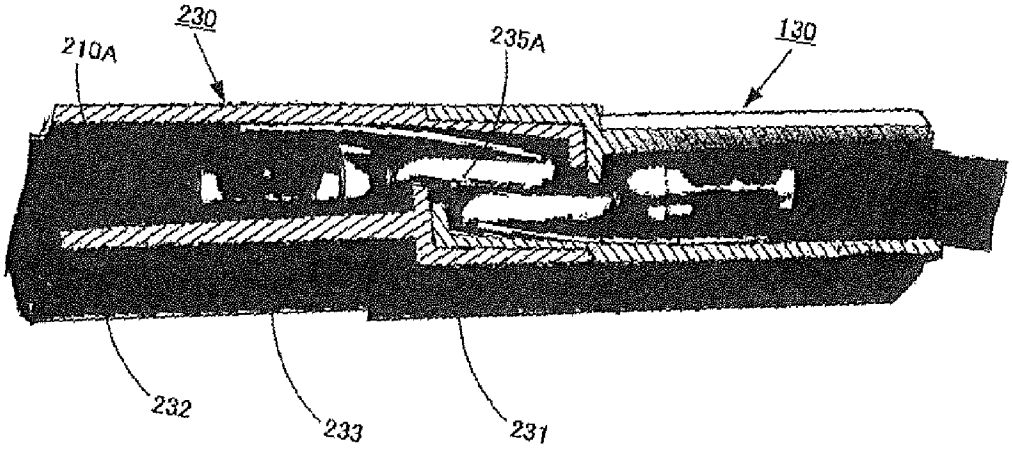

120B
120A
245
151
244
242
240
241
232
231
230

(B)

【図４】


231
235B
235A
233
232
230

【図５】



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AUSTRALIA

Patents Act

IN THE MATTER of Australia Patent Application No. 2015258229 in the name of THE NOCO COMPANY

- and -

A Notice of matters affecting validity

Annexure SL-6

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Notice

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DESCRIPTION JP3185027

The present invention functions as a jump starter, a booster cable for a portable auxiliary power supply device having excellent portability small, lightweight, resistant to relatively heavy bending motion, with no fear of causing breakage of the core wire to provide a booster cable. A two connection cables 120A, the mounting male and female homologue connector cover 240 to the two-pole connector 230 of the structure for connecting the 120B on a portable auxiliary power supply device, two of which are derived from the two-pole connector 230 fixed by the connector cover 240 a derivation part of the connection cable. If you move as it is lifting the auxiliary power supply device grabbed the booster cable, adds a strong tensile force, because the derivation portion of the cable to be repeatedly bent is clamped protected by a connector cover, fear of disconnection to the heart line is eliminated. .FIELD 6

Booster cables for a portable auxiliary power supply device

[0001]

Present invention, when the battery of the vehicle is raised, and is connected to the vehicle battery, and supplies power to electrical loads of the vehicle, including a starter to start the engine, for causing the jump start to start the engine on the booster cables for a portable auxiliary power supply device.

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[0002]

Conventionally, for example in the street or the like, due to an increase in consumption quantity of electricity, the battery mounted on the vehicle is insufficient battery capacity becomes discharge Pounds is the voltage decreases, if the electrical equipment is not working (the so-called dead battery If), Jumpstart starting the engine is being performed by supplying power through a booster cable from the other automotive battery or an emergency portable power supply (Copyright starter). Then, a technique for facilitating electrical connection for Jumpstart (e.g., see Patent Documents 1 and 2) and determines art Jumpstart (e.g., see Patent Document 3) various proposals like have been made.

[0003]

Conventionally, in a jump starter, sealed lead-acid battery has been used from the relationship between cost and capacity.

[0004]

In addition, information equipment such as a rechargeable battery-powered notebook PC and its ancillary equipment by using the AC adapter has been widely used. In addition, the vehicle for the power socket of DC12V / 24V, which is standard mounted in the vehicle of the vehicle, electric equipment available for automotive applications to connect to the so-called cigar socket is provided a number. Also, it has been widely used in recent years mobile phones, USB (Universal Serial Bus) can be driven in power saving, such as a feedable portable music player in electronic devices. Conventionally, and portable power device is used in order to use the electric device outdoors.

[0005]

Incidentally, in the conventional jump starter using a general sealed lead-acid battery, weighs approximately 5 ~ 7Kg, there is a problem of lacking in portability. Also, it takes an average of about 10 to 15 hours to fully charge, start-up (jump-start) possible number of times in a fully charged state was about 5 times on average. In addition, lead-acid batteries, perform the

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deterioration is quickly over-discharge or overcharge, there is also proceed easy nature self-discharge, discharge rate of the normal lead-acid batteries is a about 30%, also self-discharge in the non-use state the need for charging on comes out. Charging operation in a proper time a person can not become is not done, it is often that would cause the overcharge and over-discharge, anyone not easily can handling, ease of use was very bad.

[0006]

Also in the conventional portable power equipment, heavy because lead storage battery is used, there is a similar problem with the conventional jump starter from the viewpoint of portability and usability.

[0007]

JP 2004-134278 JP-2011-97710 JP-2007-278216 JP

[0008]

Applicant is, in view of the conventional circumstances such as mentioned above, functions as a jump starter, moreover, the battery-driven notebook PC and information equipment such as the attendant equipment, available vehicle connected to the cigarette lighter correspondence of electric equipment, has a function as a portable power source to enable the use of such as the power supply can be a portable music player in the mobile phone, USB, further, OBD (on-Board Diagnostic system) memory backup of a vehicle corresponding to the system excellent portability in a compact and lightweight, which functions as a portable power source for use, and proposed a user-friendly vehicle auxiliary power supply device before, has to offer.

[0009]

By the way, in the case of the above-mentioned vehicle auxiliary power supply device, because of its excellent portability with compact and lightweight, in a state in which to connect the booster cable to the power supply device, often a user to move as it is lifting the power supply device grabbed the booster cable it has been found.

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[0010]

If you move directly lift the grab auxiliary power supply apparatus for vehicle of the above booster cable, said booster cable, with a strong tensile force is applied by the weight of the vehicle auxiliary power supply device, a connector provided in the booster cable of would be repeatedly bent in the vicinity, the disconnection cord possibility arises.

[0011]

This invention has been made in view of the conventional circumstances such as described above, its object has a function as a jump starter, with a booster cable for a portable auxiliary power supply device having excellent portability in size and weight there is, withstand relatively intense flexion movement, is to provide a risk-free booster cable to cause the disconnection of the core wire.

[0012]

More specific advantages obtained Other objects, according to the present invention of the present invention will become more apparent from the embodiment to embodiment to be described with reference to the drawings hereinafter.

[0013]

This invention relates to a booster cable for a portable auxiliary power supply apparatus having a function as jump starter, two connection cables and, alligator for two jump starter which is connected to one end of the two connection cables clip and, provided on the other end edge portion of the two connection cables, two-pole connector and the male and female homologue structure for connecting the two connection cables to the portable auxiliary power supply device, said 2-pole connector It mounted on, characterized in that it comprises a connector cover to secure the outlet portion derived from the two-pole connector of the two connection cables.

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[0014]

In booster cables for a portable auxiliary power supply device according to the present invention, the two-pole connector, the connection and the contact insertion portion connected contact is inserted into the cable, the connection cable, which is connected to the contacts a cable lead-out section for covering the having a connector housing provided that, the connector cover is made half and a lower half after being divided into two by a plane along said connecting cable is constituted by the upper half and the lower half that includes a mounting portion for covering the cable lead-out portion of the connector housing, a cable support portion for sandwiching said two connection cables derived from the housing of the two-pole connector, to the cable lead-out portion in the mounting portion it can be assumed to be fixed integrally assembled.

[0015]

According to the present invention, functions as a jump starter, a booster cable for a portable auxiliary power supply device having excellent portability small, lightweight, resistant to relatively heavy bending motion causes the disconnection of the core wire and to provide a risk-free booster cable.

[0016]

The vehicle auxiliary power supply apparatus connected to a booster cable according to the present invention is an external perspective view from the front side obliquely upward. Is a block diagram showing an electrical configuration of the vehicle auxiliary power supply device. It is a plan view of a booster cable showing the state attaching the connector cover to the two-pole connector. Is a plan view showing the contact with the connector housing of the two-pole connector that is connected to the booster cable. It is an essential part longitudinal cross sectional showing a connection state of the two-pole connector. It is an exploded perspective view of a connector cover attached to the 2-pole connector. An external perspective view showing a state in which mounting the connector cover to the two-pole connector, (A) shows a state viewed from the upper surface side, (B) shows a state in which inside out the two-pole connector.

[0017]

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Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings. The present invention is not intended to be limited only to the following embodiments, it is needless to say various modifications are possible within the scope not departing from the gist of the present invention.

[0018]

This invention is, for example, as shown in FIG. 1, is applied to the booster cable 200 connected to the vehicle auxiliary power supply device 100. The vehicle auxiliary power supply device 100 is a portable auxiliary power supply apparatus having a function as jump starter, comprising a housing 10 of the thin box shape as shown in perspective view in FIG. 1, also in Fig. 2 charging circuit unit 1 is installed inside of the housing 10 as shown in the block diagram, and a lithium ion storage battery 2, the output circuit section 3 and the control circuit unit 4.

[0019]

And, in the vehicle auxiliary power supply device 100, DC input terminal 20 to the power supply cable for charging for receiving the supply of power from a household power source or car battery for example 12V is made of a DC jack is externally connected via a DC plug There has been installed in the left side wall of the housing 10. The DC input terminal 20, the charging circuit section 1 are connected internally. The above-mentioned charging circuit section 1, the lithium ion storage battery 2 is internally connected. The aforementioned lithium ion storage battery 2, the output circuit portion 3 are internally connected. Furthermore, to the charging circuit unit 1 and the output circuit section 3, the control circuit unit 4 are internally connected.

[0020]

Further, the vehicle auxiliary power supply device 100, first for the second DC output terminal 32, USB power supply for the first DC output terminal 31, PC power supply for Jumpstart that is internally connected to the output circuit section 3 comprising a third DC output terminals 33 and the fourth DC output terminal 34 for memory backup power supply.

[0021]

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The first DC output terminal 31 is composed of a jack booster cable 200 is externally connected via a plug using a so-called Anderson connector male and female homologues structure.

[0022]

The second DC output terminal 32 is composed of a jack PC power cable is externally connected via a plug.

[0023]

The third DC output terminals 33 consists of a USB socket USB cable is externally connected via a USB plug.

[0024]

The fourth DC output terminal 34 is made of a cigarette lighter with an external power cable is externally connected via a cigar plug.

[0025]

A first DC output terminal 31 for the above-mentioned jump-start, the second DC output terminal 32 for the PC power is disposed on the right side wall of the housing 10. The third DC output terminals 33 for said USB power supply is installed in the front wall 13 of the housing 10, a fourth DC output terminal 34 for the memory backup power source, of the housing 10 It is installed on the left side wall 11.

[0026]

In addition, this vehicle auxiliary power supply device 100 includes a power switch 41 are

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internally connected to the control circuit section 4, jump-start switch 42, a write select switch 43 and the side lights on / off switch 44. The power supply switch 41, jump start switch 42, the write select switch 43 and the side light-on / off switch 44 is disposed on the front wall 13 of the housing 10.

[0027]

In addition, this vehicle auxiliary power supply device 100, internal connection has been charged the amount of the display unit 51 to the control circuit section 4, the battery low indicator lights 52, a pair of emergency warning light 53A, 53B and a pair of side lighting 54A, equipped with a 54B.

[0028]

The charging amount display portion 51 and a pair of emergency warning light 53A, 53B is disposed on the front wall 13 of the housing 10.

[0029]

The charging amount display section 51, (in this embodiment, red, orange, yellow, green 4 colors) arranged emission colors different in a straight line is constituted by the LED. The charge amount display unit 51 is controlled by the control circuit unit 4 not only serves to bar display the charge level, and functions as a power lamp with green lighting, also functions as a jump-start lamp by Yellow Solid to. In addition, the pair of the emergency warning light 53A, 53B consists of a red LED and a white LED, is controlled by the control circuit unit, which functions as an emergency warning light by flashing alternately.

[0030]

Further, the battery low indicator lamp 52 is installed in the right wall of the housing 10.

[0031]

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The battery low indicator lamp 52 is made of a red LED, a is controlled by the control circuit unit 4, by the voltage of the lithium-ion storage battery 2 is flashing or lit state decreases to a predetermined value, the battery low indicator lights to function as.

[0032]

Further, the pair of side illumination lamps 54A, 54B is composed of a plurality of white LED arranged in a straight line, respectively.

[0033]

The vehicle auxiliary power supply device 100 having such a configuration, the control circuit unit 4 installed in the housing 10, the charge control unit for controlling the operation of the charging circuit unit 1, the operation of the output circuit section 1 the output control unit for controlling a microcomputer that functions as a display control unit for controlling the operation of such charge amount display section 51, controls the internal connected operation of the charging circuit unit 1 and the output circuit section 3 as follows to.

[0034]

Here, the power supply cable for charging which is connected to the vehicle auxiliary power supply device 100, and the AC adapter cable for power supply of 12V for charging from a household power source, the power supply from the automobile battery eg 12V cigar plug cable for supplying has been prepared.

[0035]

Then, the control circuit unit 4 in the vehicle auxiliary power supply device 100, the DC input terminal 20 to the AC adapter cable or cigar plug cable is an external connection, the power supply for charging is supplied from a household power source or car battery by detects that the voltage higher than a predetermined voltage value to the DC input terminal 20 is applied, it

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controls the charging mode.

[0036]

In control of the charging mode, the control circuit unit 4 controls the operation of the charging circuit unit 1 by the charging control unit, to charge the Li-ion accumulator 2 via the charging circuit unit 1, the lithium-ion to function overcharge protection circuit and the storage battery 2 is charged to the full charge, charging is terminated.

[0037]

Further, the control circuit unit 4, during charge control, by controlling the operation of the output circuit section 3 by the output control unit prohibits the power supply to the outside from the output circuit section 3.

[0038]

Further, the control circuit unit 4, during charge control, by controlling the operation of the charge amount indicator 51 by the display control unit, and the bar display the charge level by controlling the charge amount indicator 51.

[0039]

The charging amount display unit 51 is operated by the control circuit unit 4 is controlled, from the non-charged state, the red lighting shown red point state showing a 20% or less remaining battery level, a 20% to 30% battery remaining amount, orange flashing indicating the 40% from the battery remaining 30%, yellow indicates the 70% from the battery remaining 40% lighting state, to the green lighting state shown 100% from 70% remaining battery capacity, is charged to a fully charged state in accordance with the advance, the lighting conditions change sequentially.

[0040]

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The vehicle auxiliary power supply device 100 is in a state of charging the lithium-ion storage battery 2, and functions as a portable jump starter, can also be used as a portable power supply for use electrical equipment outdoors.

[0041]

Here, in the vehicle auxiliary power supply device 100, an external connection via the plug 230 into the jack 130 consisting of a so-called Anderson connector male and female homologue structures constituting the first DC output terminal 31 for the above Jumpstart booster cable 200 for jump Start to be is prepared.

[0042]

Said booster cable 200, as shown in FIG. 3, two connection cables Cables 210A, 210B at one end portion connected to the two jump starter alligator clips 220A, and 220B, the above two connection cables Cables 210A, provided on the other end of the 210B, the two connection cables cable 210A, 210B of the two-pole connector 230 of the male and female homologue structure for connecting to the auxiliary power supply device 100 for the vehicle, to the two-pole connector 230 attached, it provided the two connection cables 210A, and a connector cover 240 to fix the derivation part that is derived from the two-pole connector 230 of 210B.

[0043]

Said two-pole connector 230, as shown in FIG. 4, the connection cable 210A, contact 235A that is connected to 210B, and the contactor inserting portion 231 235B is inserted, the connection cable connected to the contacts 210A, a cable lead-out portion 232 is provided to cover the 210B, to show the essential part longitudinal cross sectional view of a connected state in Figure 5, was physically impossible misconnection despite no distinction between male and female consisting of a so-called Anderson connector male and female homologue structure having a connector housing 233 of the structure.

[0044]

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Further, the connector cover 240, as shown in FIG. 6, formed by the connection cable 210A, consists half 241 and lower half 242 after being divided into two by a plane along 210B, the upper half 241 and lower half 242 It includes a mounting portion 244 that covers the cable lead-out portion 232 of the connector housing 233 that is, the connection cable 210A of the two derived from the connector housing 233, a cable support portion 245 for holding the 210B. Then, the connector cover, as shown in FIG. 7 (A), (B), integrally assembled with screws 251 and nuts 252 upper half 241 and lower half 242 to the cable lead-out portion 232 in the mounting portion It is fixed.

[0045]

In the above booster cable 200 is attached to the connector cover 240 of such a structure cable lead-out portion 232 of the two-pole connector 230, the connection of the two, which is derived from the cable lead-out portion 232 of the two-pole connector 230 cable cable 210A since the derivation part of the 210B is held by a cable support portion 245 of the connector cover 240, withstand relatively intense flexion movement, fear is unnecessary to cause the disconnection of the core wire.

[0046]

Then, the vehicle auxiliary power supply device 100 is connected to the vehicle battery of the vehicle to jump start through the booster cable 200 is used as a jump starter as follows.

[0047]

In other words, if you use this vehicle auxiliary power supply apparatus 100 as a jump starter, power switch 41 of the vehicle auxiliary power supply device 100 is in a state of OFF, booster cables 200 for the jump start by the user the first DC It is connected to the output terminal 31.

[0048]

The user of the vehicle auxiliary power supply device 100, by a plurality of LED constituting the

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charge amount indicator 51 is turned off all, it can be confirmed that the power switch 41 is in the OFF state .

[0049]

Next, when the user to power ON by pressing the power switch 41, the control circuit unit 4 of the vehicle auxiliary power supply device 100 detects the power ON control the operation of the charge amount display unit 51 by the display control unit , the above-mentioned charge amount display section 51 and the green lighting state. The charging amount display unit 51, which functions as a power ramp to display the power ON by the green lights.

[0050]

Then, when the user with this power ON state to jump-start by pressing the jump-start switch 42, the control circuit section 4 of this vehicle auxiliary power supply device 100, detects a jump start by a short period of time operation of the jump-start switch 42, to control the jump-start mode.

[0051]

In control of the jump-start mode, the control circuit unit 4, when can detect normally the voltage of the vehicle battery of a motor vehicle to jump start through the booster cable 200 to the first DC output terminal 31 for the above Jumpstart the to control the operation of the output circuit section 3 by the output control unit, the first DC output terminal 31 for the above-mentioned jump-start via the output circuit section 3 the lithium ion storage battery 2 as a power supply for Jumpstart as well as connection to control the operation of the charging amount display unit 51 by the display control unit, and the above charge amount display section 51 and the yellow lighting state. The charging amount display unit 51, which functions as a jump-start lamp that displays a jump start by yellow lights. In this jump-start mode, the charging amount display unit 51 is displaying a jump-start by yellow lights and displays the power ON by the green lights.

[0052]

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In the state of the jump start mode, the user can perform a jump start to start the vehicle engine to the vehicle auxiliary power supply device 100 is equipped with the on-vehicle battery connected.

[0053]

Here, jump starter capacity of about 12V / 4.5Ah using a conventional general lead-acid batteries, body weight is there about 5kg~7kg, start-up possible number of times in the full charge-conductive state is about average 5 times contrast was there, the vehicle auxiliary power supply apparatus 100 according to an embodiment of the present invention is, for example, 30mm × 150mm × 100mm (length × width × depth) of the size of the rechargeable lithium, for example, 3.6V to housing 10 by implemented ion three series-connected, to function as a portable jump starter of the capacity of 12V / 4.5Ah corresponding to the gasoline passenger cars up to 3000cc weighs 830g about, small, lightweight, yet, full charge It has been improved to be about 10 to 20 times the starting number of possible at-conductive state.

[0054]

Further, the vehicle auxiliary power supply device 100, for example 45 mm × 190 mm × with a housing 10 of the size of 180 mm (length × width × depth), by implementing six rechargeable lithium ion double , to function as a portable jump starter of the capacity of 12V / 9Ah corresponding to diesel vehicles to gasoline passenger cars in general and 3000cc4 cylinder weighs 1300g about.

[0055]

In addition, the control circuit unit 4 in this vehicle auxiliary power supply device 100, when the user press a long time operation that is for example more than 5 seconds and hold the jump-start switch 42 in the power supply ON state, becomes a control state of charge boost mode, the the electricity which is charged in the lithium ion storage battery 2 so as to emit at a time, to control the operation of the output circuit section 3 by the output control unit. In the control state of the charge boost mode, to control the operation of the charging amount display unit 51 by the display control unit, and the above charge amount display section 51 and the yellow lighting state. In other words, the charge amount display unit 51, which functions as a charge boost mode that displays the charge boost mode by yellow lights. The charge boosting mode is used when the

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vehicle battery is in deeply discharged state.

[0056]

Further, the vehicle auxiliary power supply device 100 weighs 830g approximately one capacity as described above 12V / 4.5Ah, since it is small and light in weight of approximately 1300g be of capacity of 12V / 9Ah, portability excellent, moreover, in addition to the first DC output terminal 31 for the above-mentioned jump-start, and a second to fourth DC output terminals 32 to 34 for external connection for using electrical equipment outdoors so, it can be used as a portable power source, as follows.

[0057]

That is, in the vehicle auxiliary power supply device 100, above the second DC output terminal 32, it is possible to externally connect a PC via the PC power cable.

[0058]

Further, in the vehicle auxiliary power supply device 100, above the third DC output terminals 33, by connecting the electronic device such as a feedable portable music player through a commercially available USB cable by a USB (Universal Serial Bus) can.

[0059]

Further, the vehicle auxiliary power supply device 100 functions as a portable power source for driving electrical equipment of Automotive via a cigar gable which is externally connected to the fourth DC output terminal 34. Furthermore, the vehicle auxiliary power supply device 100, as a portable power source for memory backup of a vehicle corresponding to the OBD (On-Board Diagnostic system) system via a cigar gable which is externally connected to the fourth DC output terminal 34 Function.

[0060]

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That is, the vehicle auxiliary power supply device 100 has a function as a jump starter, moreover, the battery-driven notebook PC and information equipment such as the attendant equipment, electricity available for Automotive connect to cigarette lighter equipment, has a function as a portable power source to enable the use of such as the power supply can be a portable music player in the mobile phone, USB, further, OBD (on-Board Diagnostic system) portable for memory backup of a vehicle corresponding to the system excellent portability in small and light that functions as a power source, and has a user-friendly vehicle auxiliary power supply device. In addition, this vehicle auxiliary power supply device 100, not only function as a jump starter and portable power source, such as described above, to function as a warning display lamps and lighting to be used in an emergency.

[0061]

As embodiments of the present invention described above, the booster cable 200 for a portable auxiliary power supply apparatus connected to the vehicle auxiliary power supply device 100 which functions as jump starter with excellent lightweight portability, since the above-mentioned two-pole is derived from the cable lead-out portion 232 of the connector 230 the above-mentioned two connection cables cable 210A, is derived part of the 210B is held by a cable support portion 245 of the connector cover 240, withstand relatively intense flexion movement , there is no fear of causing breakage of the cord, it is possible to achieve the intended purpose.

[0062]

1 charging circuit section, 2 lithium ion rechargeable battery, 3 output circuit section, 4 control circuit section, 10 housing, 11 left side wall, 12 right-hand wall, 13 front wall, 20 DC input terminal, 31 a first DC output terminal, 32 second DC output terminal, 33 third DC output terminal, 34 fourth DC output terminal, 41 power switch, 42 jump-start switch, 43 write select switch, 44 a side light on / off switch, 51 charge amount display unit, 52 battery low indicator lights, 53A, 53B emergency warning light, 54A, 54B side lighting, 100 vehicle auxiliary power supply device, 200 booster cables, 210A, 210B cable, 220A, alligator clip for 220B jump starter, 230 2-pole connector, 231 contact inserting portion, 232 cable lead-out portion, 233 connector housing, 235A, 235B contact, 240 connector cover, 241 upper half, 242 under half, 244 mounting portion, 245 cable supporting part

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(54) MICROPROCESSOR CONTROLLED BOOSTER APPARATUS WITH POLARITY PROTECTION

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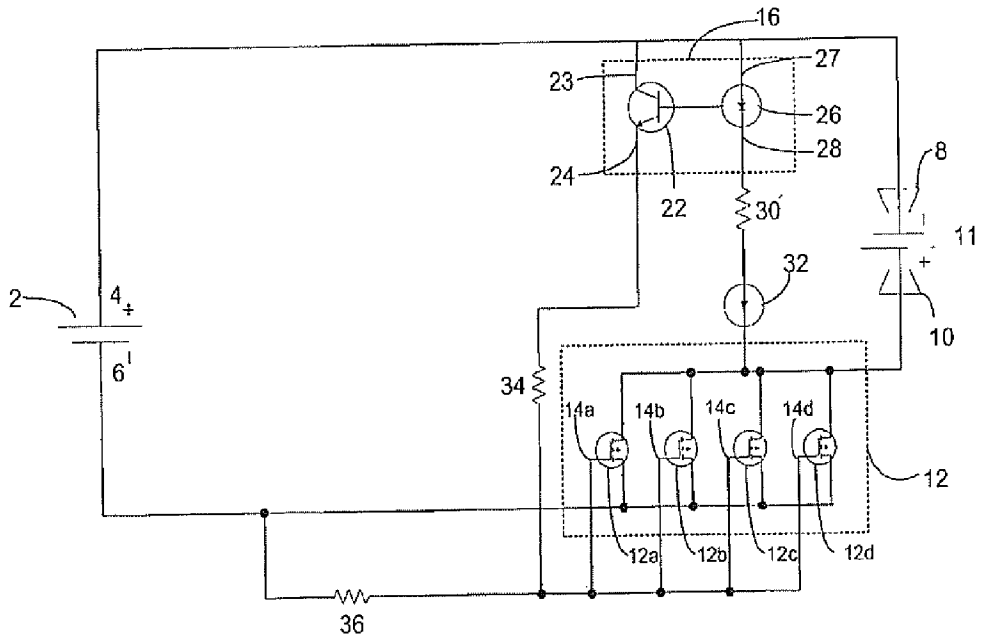
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(52) U.S. Cl. 320/165

(57) ABSTRACT

A polarity protection circuit for a battery booster device is provided. According to an exemplary embodiment, the polarity protection circuit is comprised of solid-state devices. Preferably no mechanical or electro-mechanical devices, such as solenoids are included in the polarity protection circuit. The polarity protection circuit is electrically connected to the battery to be charged and to the boosting battery. The polarity protection circuit prevents current flow between the batteries unless proper polarity is achieved.



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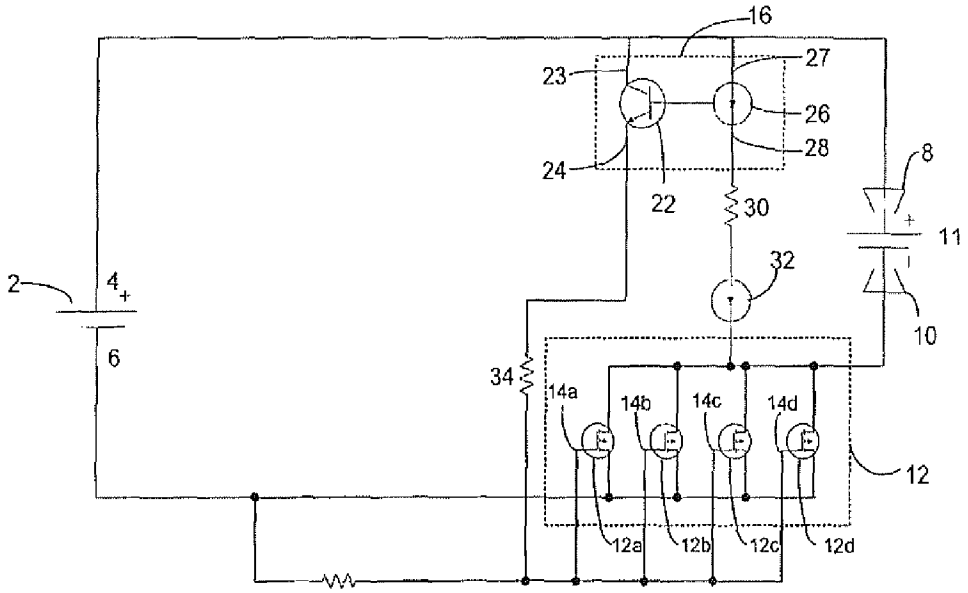

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Fig. 1

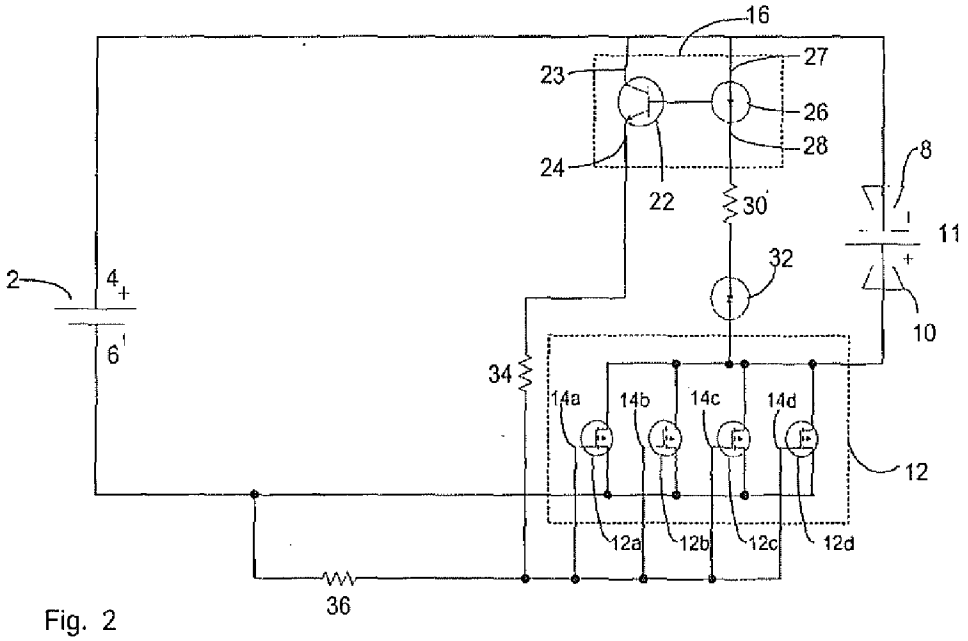

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Fig. 2

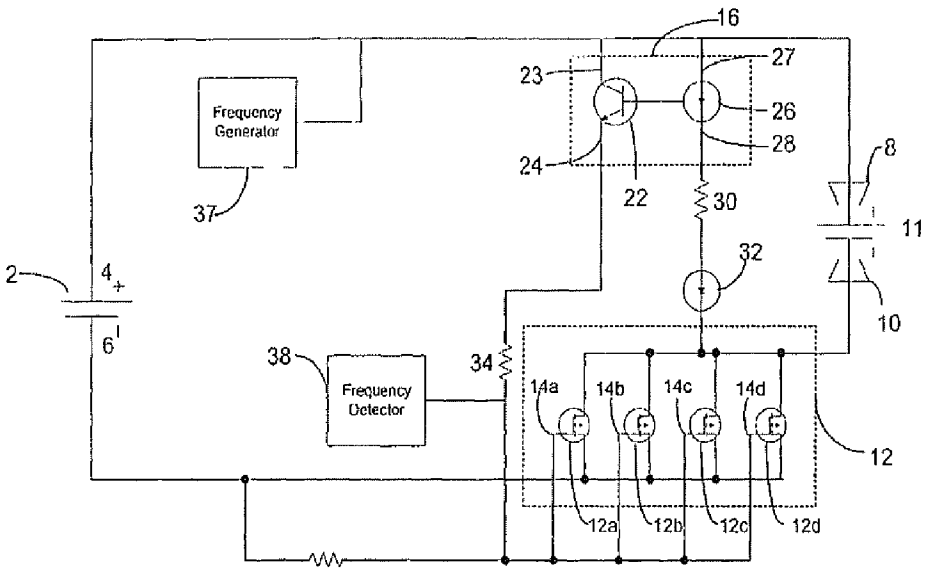

16
27
23
26
28
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22
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Frequency Generator
37
2
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+
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Frequency Detector
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14a
14b
14c
14d
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12a
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Fig. 3

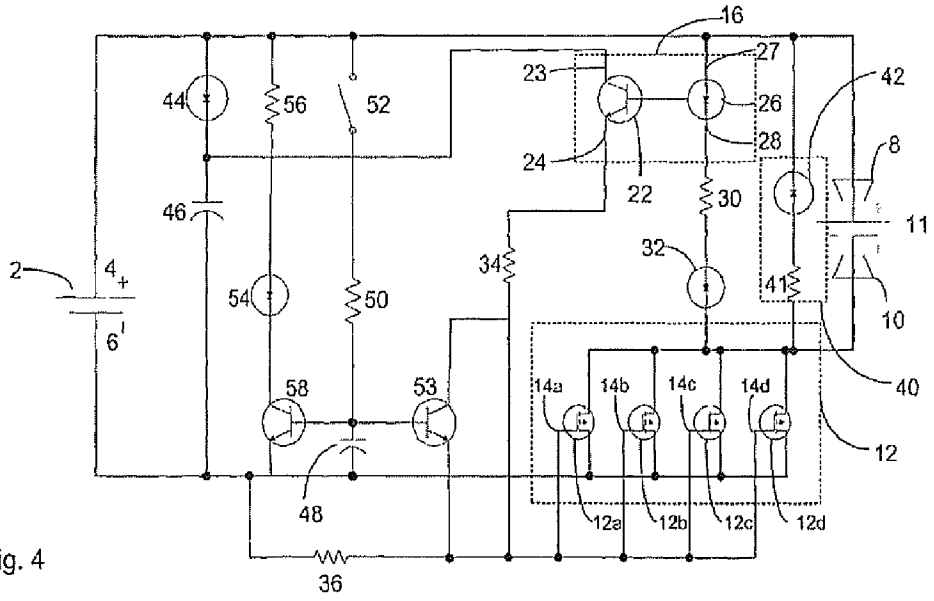

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14a
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12a
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Fig. 4

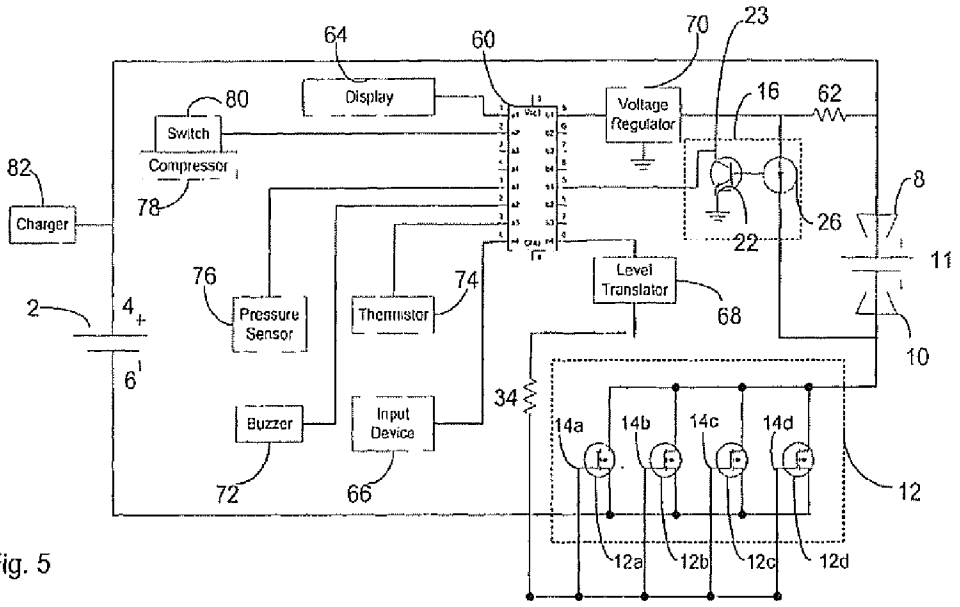

64
60
70
23
Display
Voltage Regulator
16
62
80
Switch
Compressor
82
Charger
78
26
22
8
11
76
Pressure Sensor
74
Thermistor
Level Translator
68
2
4
6
10
34
Buzzer
Input Device
14a
14b
14c
14d
72
66
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12a
12b
12c
12d

Fig. 5

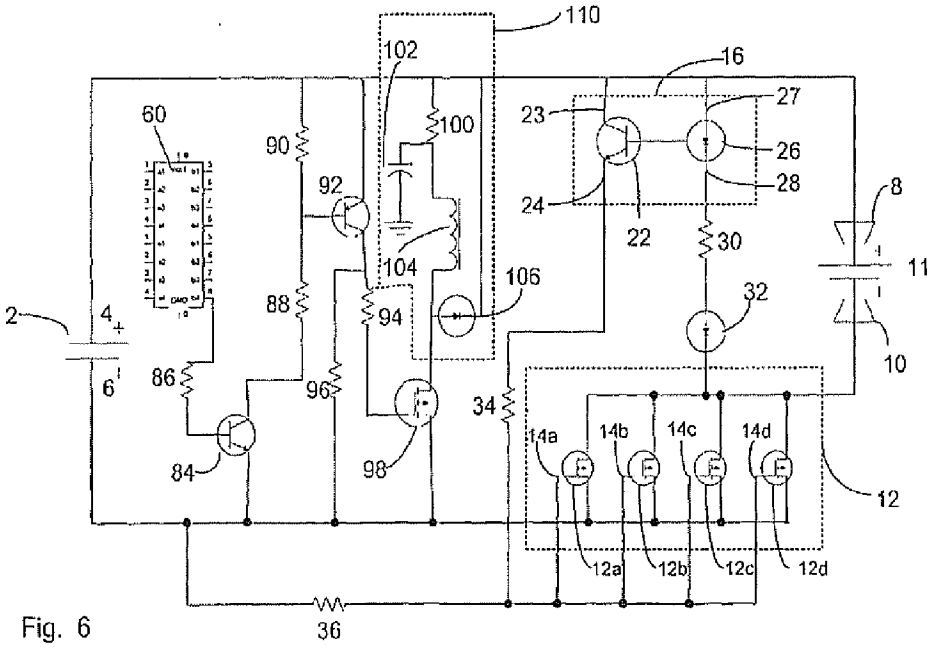

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32
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10
86
96
34
14a
14b
14c
14d
84
98
12
12a
12b
12c
12d
36

Fig. 6

US 2004/0130298 A1 Jul. 8, 2004

MICROPROCESSOR CONTROLLED BOOSTER APPARATUS WITH POLARITY PROTECTION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority from U.S. Provisional Application Ser. Nos. 60/357,146 filed Feb. 19, 2002 and 60/369,839 filed Apr. 5, 2002, the contents of both of which are incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a booster device used for boosting a depleted battery and in particular to microprocessor control of the booster apparatus and a polarity protection circuit.

BACKGROUND OF THE INVENTION

[0003] It is well known that when an engine of an automobile is not able to be started due to insufficient electric power, a battery of the automobile can be jump started by power from a battery of another automobile or from a battery in a booster device to thereby start the engine.

[0004] To boost the battery of the automobile which is of insufficient electric power by power from another battery, the two batteries must be connected through a pair of electric wires. For example, the positive terminal of the depleted battery should be connected to the positive terminal of the boosting battery. The negative terminals of the two batteries should be connected in a corresponding manner.

[0005] Making this connection, however, can be very dangerous if the batteries are connected incorrectly. A battery has a small internal resistance, and there is a voltage difference between a battery with sufficient electric power and a battery with insufficient electric power. Current will thus flow between the two batteries as soon as a connection is made. When the two batteries are connected correctly, which means that terminals of corresponding polarities are connected respectively as described above, a large current passes through the electric wires. When the two batteries are connected erroneously, a current which passes through the electric wires is 10 to 20 times larger than the current existing on the electric wires when the batteries are correctly connected. Additionally, incorrect connection may result in one or both of the batteries being short-circuited. Under such conditions, one or both of the batteries may be damaged, and in some cases, an explosion, fire and damage to the vehicle or to a person may result.

[0006] Thus, there is a need for a device, which can be used to ensure that the connection of the two batteries is made correctly and in a safe manner. The device should minimize any risk resulting from incorrect connection between the two batteries and from a short-circuit of one or both of the batteries.

[0007] The failure of an engine of an automobile to start due to insufficient electric power, in addition to being due to a battery with insufficient power, may also be due to a bad alternator that has failed to replenish the charge on an otherwise good battery. With a bad alternator, even if the battery is replaced, the new battery does not accumulate electric charge, and its charge is soon drained out again. A bad alternate r needs to be replaced in order to prevent recurring low battery problems. Detecting a bad alternator, however, is not an easy task to an inexperienced person.

[0008] Also, other simple tasks such as checking the air pressure of a tire, checking for freon gas leakage, and inflating a tire to a proper pressure can often be difficult to those without the necessary experience and know-how. It would also be convenient to know the state of the charge of the jump starter battery itself, as well as the state of charge the depleted battery before and after a jump start.

[0009] There is therefore a need for a self-contained jump starter system that can be used as a jump starter, tester, and diagnostic system for a vehicle to assist in performing vehicle diagnostics and minor vehicle repairs. There is also a need for a portable, self-contained jump starter system of the above type that is rugged, has a minimum number of components, is user friendly to people who are not experienced with automobiles, provides self-testing and vehicle diagnostics, and is relatively inexpensive so as to be affordable by a large number of consumers.

SUMMARY OF THE INVENTION

[0010] A polarity protection circuit is provided. According to an exemplary embodiment, the polarity protection circuit is comprised of solid-state devices. Preferably no mechanical or electro-mechanical devices, such as solenoids are included in the polarity protection circuit. The polarity protection circuit is electrically connected to the battery to be charged (depleted battery) and to a boosting battery or other power source. The polarity protection circuit prevents current flow between the batteries unless proper polarity is achieved. The polarity protection circuit is described below in the context of a battery booster device, but it can be used in conjunction with any charging or boosting device.

[0011] Typically, a battery booster device comprises a pair of cables connected at one end to a built-in battery or other power source arranged in a portable box. The other ends of the cables are connected to a pair of alligator clamps. The built-in battery provides a DC power source for boosting a depleted battery. When the clamps are connected to the depleted battery, current flows from the built-in battery of the battery booster device to the depleted battery. As mention above, a polarity protection circuit is provided in the booster device and prevents current flow between the batteries unless a proper polarity connection between the two batteries is achieved.

[0012] In a further embodiment, the battery booster device may also comprise a microprocessor. The microprocessor can be used as part of a polarity protection circuit. It may also perform additional detection and control functions, such as detecting a bad alternator, detecting a freon leak, and detecting low tire pressure and controlling an air compressor to address the low tire pressure. In connection with this, the booster device may further include a display and/or other notification devices, such as a visual or audio indicator.

[0013] In another embodiment of the invention, a polarity detection circuit is provided. The circuit comprises: cables for connecting a boosting battery to a depleted battery; a polarity sensing circuit coupled to the boosting battery for providing an enable signal when a correct polarity connection is made between the boosting battery and the depleted battery; and a solid state switch coupled to the polarity

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sensing circuit, the solid state switch permitting current flow between the boosting battery and the depleted battery when it receives the enabling signal.

[0014] In another exemplary embodiment, a booster apparatus is provided. The apparatus comprises: a boosting battery having a positive terminal and a negative terminal; a first cable coupled to the positive terminal of the boosting battery and having a clamp for connection to a terminal of a depleted battery; a second cable coupled to the negative terminal of the boosting battery and having a clamp for connection to another terminal of the depleted battery; a solid state switch arranged in series with one of the cables; a polarity sensing circuit coupled between the first cable and the second cable, the polarity sensing circuit providing an enable signal to place the solid state switch in a conducting state when a correct polarity connection is made between the boosting battery and the depleted battery.

[0015] In a further embodiment, a booster apparatus comprises: means for providing power; means for connecting the means for providing power to a depleted battery; means for detecting polarity of the connection between the means for providing power and the depleted battery and for generating an enable signal when correct polarity is detected; and at least one field-effect transistor (FET) having a control electrode and being coupled to the means for detecting polarity, the control electrode receiving the enable signal and turning the FET on to allow current flow between the means for providing power and the depleted battery.

[0016] In another embodiment, a jump starter system comprises: a boosting battery having positive and negative terminals; a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the boosting battery and second ends adapted for connection to positive and negative terminals of a depleted battery; a semiconductor switch connected electrically with one of the terminals of the boosting battery and the battery cable respectively connected thereto; a polarity sensing circuit coupled to the battery cables and producing a first signal only when the battery cables connect the positive terminal of the boosting battery to the positive terminal of the depleted battery and the negative terminal of the boosting battery to the negative terminal of the depleted battery; and a microprocessor coupled to the semiconductor switch and the polarity sensing circuit and being responsive to the first signal from the polarity sensing circuit for activating the semiconductor switch to enable a current flow between the boosting battery and the depleted battery.

[0017] In another embodiment, a computer-readable information storage medium for use with a computer controlling a jump starter system, comprising a first battery having positive and negative terminals, a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the first battery and second ends adapted for connection to positive and negative terminals of a depleted battery in a vehicle, the computer-readable information storage medium sto res computer-readable program code for causing the computer to perform the steps of: checking for a rapid rise in voltage after the vehicle has been started; indicating the alternator is working properly if the rapid rise in voltage is present; and indicating the alternator is not working properly if the rapid rise in voltage is not present.

[0018] In another embodiment, a computer-readable information storage medium for use with a computer controlling a jump starter system, comprising a first battery having positive and negative terminals, a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the first battery and second ends adapted for connection to positive and negative terminals of a depleted battery, the computer-readable information storage medium stores computer readable program code for causing the computer to perform the steps of: measuring a charge rate of the battery; determining an amount of time the battery has been receiving a current; measuring a voltage of the battery; and detecting an overtime fault if the charge rate is greater than a predetermined current, the battery has been receiving a current longer than a predetermined amount of time, and the voltage of the battery is greater than or equal to a predetermined voltage.

[0019] In another embodiment, a computer-readable information storage medium for use with a computer controlling a jump starter system, comprising a first battery having positive and negative terminals, a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the first battery and second ends adapted for connection to positive and negative terminals of a depleted battery, the computer-readable information storage medium stores computer-readable program code for causing the computer to perform the steps of: measuring a charge rate of the battery; determining an amount of time the battery has been receiving a current; measuring a voltage of the battery; and detecting a shorted cell battery fault if the charge rate is greater than a predetermined current, the battery has been receiving a current more a predetermined amount of time, and the voltage of the battery is less than or equal to a predetermined voltage.

[0020] In another embodiment, a computer-readable information storage medium for use with a computer controlling a jump starter system, comprising a first battery having positive and negative terminals, a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the first battery and second ends including clamps adapted for connection to positive and negative terminals of a depleted battery, the computer-readable information storage medium stores computer-readable program code for causing the computer to perform the steps of: measuring a voltage at the clamps; indicating a bad battery fault if no voltage is detected at the clamps; and proceeding with a jump starting operation if a voltage is detected at the clamps.

[0021] In another embodiment, a computer-readable information storage medium for use with a computer controlling jump starter system, comprising a first battery having positive and negative terminals, a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the first battery and second ends adapted for connection to positive and negative terminals of a depleted battery, the computer readable information storage medium stores computer-readable program code for causing the computer to perform the steps of: measuring a charge current of the battery; determining an amount of time the battery has been receiving current; measuring a voltage of the battery; and detecting an open cell battery fault if the charge current is less than a predetermined current, the battery has been

receiving current more a predetermined amount of time, and the voltage of the battery is greater than or equal to a predetermined voltage.

BRIEF DESCRIPTION OF THE FIGURES

[0022] FIG. 1 is a circuit schematic that illustrates a polarity protection circuit according to a preferred embodiment of the invention;

[0023] FIG. 2 is a circuit schematic that illustrates a polarity protection circuit according to another preferred embodiment of the invention;

[0024] FIG. 3 is a circuit schematic that illustrates a polarity protection circuit according to another preferred embodiment of the invention;

[0025] FIG. 4 is a circuit schematic that illustrates a polarity protection circuit according to another preferred embodiment of the invention;

[0026] FIG. 5 is a circuit schematic that illustrates a microprocessor controlled booster system according to another embodiment of the invention; and

[0027] FIG. 6 is a circuit schematic that illustrates a microprocessor controlled booster system according to another embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0028] FIG. 1 illustrates a battery booster device including a polarity protection circuit according to an exemplary embodiment of the invention. A boosting battery 2 with a positive terminal 4 and a negative terminal 6 is provided in the booster device. The positive terminal 4 of the boosting battery 2 is coupled to one of a pair of alligator clamps 8, 10 to be connected to a battery to be charged 11 (depleted battery) via a wire or battery cable. The negative terminal 6 of the boosting battery 2 is connected to the other of the alligator clamps 8, 10 to be connected to the battery to be charged 11 via a wire or battery cable.

[0029] A switch 12 is coupled to one of the wires or battery cables to be connected to the depleted battery 11. The switch 12 is activated to complete a boosting circuit between the boosting battery 2 and the depleted battery 11 only when a correct polarity connection between the batteries is attained. In the embodiment shown, the switch 12 is arranged between the negative terminal 6 of the boosting battery 2 and the alligator clamp 10 intended to be connected to the negative terminal of the depleted battery 11. The switch 12 is thus a current handling device a nd part of the boosting circuit. Of course, other locations of the switch in the boosting circuit are possible.

[0030] The switch 12 is preferable a solid state device, such as a transistor, diode, field effect transistor (FET), etc. FIG. 1 represents the switch 12 as a number FETs 12*a*-12*d* connected in parallel with each other. The FETs 12*a*-12*d* are preferably high power, very low on-resistance types. The number of FETs provided depends upon the current flow in the circuit and the type of FET used. Control electrodes 14*a*-14*d* of the FETs 12*a*-12*d* are electrically connected to the negative terminal 6 of the boosting battery through a resistor 36. This arrangement maintains the FETs 12*a*-12*d* in an off or non-conducting state when there is no voltage at the clamps, preventing current flow from the boosting battery 2 to clamps 8, 10 and to the depleted battery 11.

[0031] The switch 12 is activated by a polarity sensing circuit 16 to allow current flow from the boosting battery 2 to the depleted battery 11. The polarity sensing circuit 16 is coupled to the boosting battery 2 and to the depleted battery 11 when the clamps 8, 10 are connected to the depleted battery 11. The polarity sensing circuit 16 senses the polarity of the connection between the boosting battery 2 and the depleted battery 11 and provides a signal indicating the state of the connection. The signal from the polarity sensing circuit 16 is provided to the switch 12. When a proper polarity connection is signaled, the switch 12 completes the boosting circuit and permits current flow to the depleted battery 11.

[0032] In the embodiment shown in FIG. 1, the polarity sensing circuit comprises an opto-isolator 16. The opto-isolator 16 comprises a phototransistor 22 and a light emitting diode (LED) 26. A collector 23 of the phototransistor 22 and an anode 27 of the LED 26 are electrically connected to the positive terminal 4 of the boosting battery 2. The emitter 24 of the phototransistor 22 is electrically connected to control electrodes 14*a*-14*d* of the FETs 12*a*-12*d* comprising the switch 12 via resistor 34. The cathode 28 of the LED 26 is electrically connected to one of the electrodes of the FETs 12*a*-12*d* through resistor 30 and diode 32. The other of the electrodes of the FETs 12*a*-12*d* is electrically connected to the negative terminal 6 of the boosting battery 2.

[0033] During operation of the battery booster device depicted in FIG. 1, the FETs 12*a*-12*d* are initially held in a non-conducting state via resistor 36. The opto-isolator 16 only turns on when it is properly biased as a result of a correct polarity connection being made between the boosting battery 2 and the depleted battery 11. When the LED 26 is properly biased, phototransistor 22 in the opto-isolator 16 turns on. Current flow through phototransistor 22 biases the control electrodes of the FETs 12*a*-12*d* into a conducting state, enabling current flow through the FETs 12*a*-12*d* to the depleted battery 11. More specifically, when the depleted battery 11 is properly connected to the boosting battery 2 as shown in FIG. 1, the LED 26 and diode 32 are forward biased. Current thus flows through these diodes and resistor 30. Resistor 30 is provided to regulate the amount of current that flows through the opto-isolator 16. The current flow through LED 26, resistor 30 and diode 32 activates the phototransistor 22, turning it on. When the phototransistor 22 is turned on, current flows through the phototransistor 22, resistor 34 and to the control electrodes of the FETs 12*a*-12*d*. The control electrodes of the FETs 12*a*-12*d* are activated in response to this current, and the FETs 12*a*-12*d* are turned on into a conducting state. The boosting circuit is now closed, and current can flow from the boosting battery 2 through the FETs 12*a*-12*d* to the depleted battery 11. The re is no need for any mechanical or electro-mechanical devices, as the FETs are the current handling devices.

[0034] When an improper polarity connection is made between the boosting battery 2 and the depleted battery 11, as shown in FIG. 2, the LED 26 in the opto-isolator 16 and diode 32 are reversed biased. Diode 32 prevents current flow from the depleted battery 11 in a reverse direction. Thus, there is essentially no current flow through the LED 26,

diode **32** and resistor **30**. Consequently, the phototransistor **22** in the opto-isolator **16** is in a non-conducting state. In turn, the FETs **12***a*-**12***d* of the switch are in a non-conducting state, and there is essentially no current flow from the boosting battery **2** to the depleted battery **11**, preventing a potentially dangerous situation.

[0035] Once a proper polarity connection is made between the batteries, the depleted battery **11** is charged or the vehicle is jump started. The alligator clamps **8**, **10** are then disconnected from the battery to be charged **11**. When the clamps are disconnected, diode **26** is no longer forward biased and no current flows therethrough, turning the phototransistor **22** in the opto-isolator off, which in turn, turns the FETs **12***a*-**12***d* off. The boosting circuit is then, in effect, reset, preventing short-circuits or a reverse polarity connection being made after a proper polarity connection is made. In a further embodiment, described below in conjunction with **FIG. 3**, the battery booster device can be provided with a disable switch that interrupts the boosting circuit to ensure the safe disconnection of the clamps from the depleted battery **11** or a microprocessor or other circuitry can be programmed to detect when the depleted battery is disconnected.

[0036] Turning now to **FIG. 3**, another embodiment of the present invention is described. The embodiment shown in **FIG. 3** operates in a similar manner to the embodiment described above in regard to **FIG. 1**. **FIG. 3** differs from **FIG. 1** in that **FIG. 3** includes a frequency generator and a frequency detector. The frequency generator and frequency detector are used to detect disconnection of the clamps **8**, **10** from the depleted battery **11** or other interruption of the boosting circuit. The frequency generator **37** is adapted to inject a signal of a particular frequency into the boosting circuit. A frequency detector **38** is adapted to detect the frequency injected into the boosting circuit by the frequency generator **37**. The frequency generator **37** and frequency detector **38** are preferably arranged on opposite sides of depleted battery **11**. When the depleted battery **11** is connected with proper polarity, a path exists for the frequency injected by the frequency generator **37** to travel through the circuit. The frequency detector **38** detects the injected frequency, and the battery boosting process proceeds normally. When the clamps **8**, **10** are removed from the depleted battery **11** or the circuit is otherwise interrupted, current flow is stopped, and the frequency detector **38** no longer detects the frequency injected by the frequency generator **37**. The frequency detector is adapted to then turn FETs **12***a*-**12***d* to a non-conducting state, resetting the boosting circuit. This prevents short circuits or a reverse polarity connection being made after a proper polarity connection has been established.

[0037] **FIG. 4** illustrates another embodiment of the present invention. The embodiment shown in **FIG. 4** includes many of the same elements described above in connection with FIGS. **1-3**. These same elements are labeled with the same reference numbers in all the figures. The circuit shown in **FIG. 4** operates in a manner similar to that described above in regard to FIGS. **1-3**, and only the differences are described in detail below.

[0038] The embodiment of the invention shown in **FIG. 4** includes an indicator **40** for indicating when a proper polarity connection between booster battery **2** and depleted battery **11** is established. The indicator **40** may provide a visual or audio indication to a user that a proper polarity connection has or has not been established. The indicator **40** illustrated in **FIG. 4** includes a resistor **41** and an LED **42**. When the alligator clamps **8**, **10** are connected to the depleted battery **11**, the resistor **41** and LED **42** are connected across the terminals of the depleted battery **11**. If the alligator clamps **8**, **10** are connected to depleted battery **11** with an incorrect polarity, LED **42** is forward biased and is illuminated indicating an incorrect connection. However, essentially nothing else occurs in the boosting circuit. The opto-isolator **16** prevents any other current flow. For example, the LED **26** in the opto-isolator **16** and diode **32** are reversed biased, preventing current flow in a reverse direction. Thus, there is no current flow through these diodes and resistor **30**. Consequently, the phototransistor **22** in the opto-isolator **16** remains off. In turn the FETs **12***a*-**12***d* remain in a non-conducting state and there is no current flow from the boosting battery **2** to the depleted battery **11**.

[0039] If the alligator clamps **8**, **10** are connected to the depleted battery **11** with a proper polarity the LED **42** is reverse biased and is not illuminated. The opto-isolator **16** is turned on, and the boosting circuit is completed as described above in connection with **FIG. 1**.

[0040] In some instances during the jump-starting process, the voltage of the boosting battery **2** may drop to low levels, for example, 2 volts or lower. In such instances, the voltage of the boosting battery **2** may become insufficient to maintain the FETs **12***a*-**12***d* in a conducting state. Thus, a means for maintaining the FETs **12***a*-**12***d* in a conducting state is provided. In the embodiment shown in **FIG. 4**, this means comprises a diode **44** and a capacitor **46** arranged in series with each other and connected across the terminals **4**, **6** of the boosting battery **2**. An anode of diode **44** is coupled to the positive terminal **4** of the boosting battery **2**. The collector of the phototransistor **22** in the opto-isolator **16** is coupled between the diode **44** and the capacitor **46**. The combination of the diode **44** and the capacitor **46** provides a high level of gate voltage that is required to keep the FETs **12***a*-**12***d* in a conducting state even if the boosting battery's voltage decays to a low level.

[0041] The embodiment of **FIG. 4** also includes a means for interrupting the current flow to the depleted battery **11** after a proper polarity connection has been established. This means for interrupting allows for safe removal of the alligator clamps **8**, from the depleted battery **11**. The means for interrupting in the illustrated embodiment includes a combination of capacitor **48**, resistor **50**, switch **52** and transistor **53**. These elements are used to turn the FETs **12***a*-**12***d* into a non-conducting state to allow for safe removal of the alligator clamps **8**, **10**. For example, switch **52** is coupled to one of the cables attached to one of clamps **8**, **10**. Resistor **50** and capacitor **48** are coupled to the other of the cables and connected in series with switch **52**. Switch **52** may be a momentary switch that when depressed, charges capacitor **48** through resistor **50**. The charging of capacitor **48** turns transistor **53** into a conducting state. The current flow from phototransistor **22** in the opto-isolator **16** is thus short-circuited across the control electrodes of the FETs **12***a*-**12***d*, turning the FETs **12***a*-**12***d* into a non-conducting state. Thus, the connection between the two batteries **2**, **11** is open circuited and the alligator clamps **8**, **10** can be safely removed from depleted battery **11**.

[0042] Further, an indicator for indicating it is safe to remove the alligator clamps from the depleted battery 11 may also be provided. In FIG. 4, the indicator includes LED 54, resistor 56 and transistor 58 coupled in series between the cables. A control electrode of the transistor 58 is coupled to switch 52. When switch 52 is depressed, transistor 58 is turned on by the current flow through the switch 52. Current thus flows through the transistor 58 and resistor 56, illuminating LED 54. Illuminated LED 54 indicates it is safe to remove the alligator clamps 8, 10 from the depleted battery 11.

[0043] Referring now to FIG. 5, an example of a microprocessor controlled jump starter system according to an embodiment of the invention is described. The microprocessor 60 can be programmed to perform essentially all of the control functions needed for operation of the jump starter. A display 64 and an input device 66 may be coupled to the microprocessor 60 to enable an operator to receive information from and input information into the microprocessor 60, respectively.

[0044] By way of a feedback circuit or other means, the microprocessor 60 can monitor the voltage and/or current being supplied to the depleted battery 11 from the booster battery 2, the voltage and/or current of the battery 11 and can detect short circuits or other faults, as described in more de tail below. A resistive divider may be used to provide the voltage and current measurements to the microprocessor's A/D input. A visual or audio indication of the faults is given, for example on display 64. A scrolling message describing the fault, a representative code, or other message may be displayed.

[0045] In this embodiment, microprocessor 60 is used to control the switch 12. Opto-isolator 16 is coupled to clamps 8, 10 via resistor 62 such that LED 26 is forward biased when a correct polarity connection between the boosting battery 2 and the depleted battery 11 is made. When forward biased, LED 26 turns on phototransistor 22. The collector 23 of the phototransistor 22 is coupled to a supply voltage via internal circuitry in the microprocessor 60. When the phototransistor 22 is on, a first signal of a first voltage is present at the collector 23 and is sensed by the microprocessor 60. When the phototransistor 22 is off, a second signal of a second voltage is present at the collector 23 and is sensed by the microprocessor 60. The microprocessor 60 provides output signals to activate the switch 12 into a conducting state when it receives the first signal and provides an output signal to deactivate the switch 12 into a non-conducting state when it receives the second signal. Additionally, the microprocessor can deactivate switch 12 to terminate the jump starting process when a fault is detected.

[0046] The output signals from the microprocessor 60 to control switch 12 are provided to control electrodes 14*a*-14*d* of transistors 12*a*-12*d*, as shown in FIG. 5. The control electrodes 14*a*-14*d* of the transistors are electrically connected to the microprocessor 60 via a level translator 68. Microprocessors normally run on low voltages, e.g., 5 volts. A low voltage power supply is provided to the microprocessor 60 from battery 2 via a voltage regulator 70. The low voltage output signals from the microprocessor 60 should be translated to higher voltages before being supplied to the transistors 12*a*-12*d*. The level translator 68 translates the output voltage of the microprocessor 60 to the higher levels that are needed to operate transistors 12*a*-12*d*. Accordingly, the output signals from the microprocessor 60 are used by the level translator 68 to generate control signals for the control electrodes of the FETs.

[0047] If the polarity connections of clamps 8, 10 to the depleted battery 11 are not correct, the switch 12 remains off. The display 64 may be controlled by the microprocessor 60 to display a message indicating reverse polarity. The microprocessor 60 may additionally activate an alarm such as buzzer 72 in response to the incorrect polarity connection.

[0048] Microprocessor 60 can be programmed to detect if clamps 8, 10 are connected to a battery or have been disconnected. To perform the detection, the microprocessor 60 deactivates the switch 12 into a non-conducting state. Via the feedback circuit or other means, the microprocessor detects whether clamps 8,10 are connected to a battery. If no battery is present, the switch 12 is placed in a non-conducting state, that is, all the FETs 12*a*-12*d* are placed in a non-conducting state. If a battery is present, the jump starting process continues. The check is preferably performed about once a second and takes less than a few thousandths of a second to complete. As such, the check is transparent to the operation of the jump starter. A comparator or operational amplifer can also be used to perform this check.

[0049] The microprocessor 60 may also be used to conduct a test of an alternator of a vehicle. When the alternator of a vehicle is working properly, the voltage level of the depleted battery 11 rises rapidly immediately after the battery is jump-started. The rapid rise in voltage can be detected by the microprocessor 60 based on the signals the microprocessor receives from opto-isolator circuit 16. If a rapid rise in voltage is detected, a message that the alternator is working properly may be shown on display 64. If no rapid rise in voltage is detected, then a message that the alternator may be malfunctioning can be shown on display 64. The rapid rise in voltage may vary depending on how depleted the battery 11 is. The microprocessor is preferably programmed to account for this variance.

[0050] According to a further embodiment of the invention, the booster system may include a freon gas leakage sensor. The sensor 74 may comprise a thermistor for sensing temperature changes due to the extreme cold produced at the point of a freon leak. The sensor 74 may alternatively comprise a transducer, such as a pressure transducer, to sense the point of a freon leak, since freon is under a high pressure in the system and the point of a leak presents a high pressure zone. The sensor is coupled to the microprocessor 60. The sensor generates an electrical signal upon detection of some physical change, e.g., a temperature or pressure change accompanying freon gas leakage. Upon receiving such a signal from the sensor 74, the microprocessor 60 may cause a message indicating a leak to appear on the display 64.

[0051] According to another embodiment of the invention, the booster system includes means for checking the inflation of the tires of the vehicle. An air pressure sensor 76 may be provided to measure the air pressure of the tires. The air pressure sensor 76 is coupled to an input of the microprocessor 60. The microprocessor 60 receives an air pressure measurement from the air pressure sensor 76 and displays the air pressure to the operator via display 64. Additionally,

a built-in compressor **78** can be connected to the microprocessor **60** through a switch **80**. According to this embodiment of the invention, a desired pressure is selected via the input device **66**. The compressor **78** is then controlled by microprocessor **60** to inflate the tire to the selected a ir pressure. The compressor **78** is automatically deactivated by the microprocessor **60** when the desired pressure is attained.

[0052] According to yet another embodiment of the invention, the microprocessor **60** can be programmed to detect the charge levels of the boosting battery **2** and the depleted battery **11**. The detected charge levels can then be communicated to an operator via display **64**. Voltage regulator **70** is coupled to the boosting battery **2** and the depleted battery **11** for detecting their charge levels.

[0053] In order to measure the charge level of the boosting battery **2**, clamps **8, 10** should be disconnected from the depleted battery **11**. The voltage regulator then produces a voltage proportional to the voltage of the boosting battery **2**, and which is within the operating range of the microprocessor **60**. The microprocessor **60** is programmed to detect when the voltage of the boosting battery **2** falls below a predetermined level, for example, about 80% of its rated value. The buzzer **72** or other device can then be activated to indicate to the operator that the charge of the boosting battery **2** is low and that it should be recharged. The booster system may be plugged into a standard 110/220-volt electrical outlet via a standard wall charger **82** to recharge the boosting battery **2**.

[0054] In order to measure the voltage of the depleted battery **11**, switch **12** between the boosting battery **2** and the depleted battery **11** should be in a non-conducting state. Microprocessor **60** can be controlled via operator input from input device **66** to place switch **12** in a non-conducting state. Clamps **8, 10** are then connected to the depleted battery **11**. The voltage regulator produces a voltage proportional to the voltage of the depleted battery **11**. The microprocessor **60** receives this signal from the voltage regulator **70** and determines and displays the voltage of the depleted battery **11** on display **64**.

[0055] The microprocessor 60 can also be programmed to detect a bad battery or a battery whose voltage is too low to be jump started. Normally, even a dead battery has some voltage, usually about 3-5 volts. Occasionally, however, a battery does not have any voltage as it is so deeply depleted that the battery is totally dead. This type of battery cannot be immediately jump started, and sometimes it can not even be charged at all. When the clamps **8, 10** are connected to this type of battery, it is as if the jump starter is not connected to anything. As the voltage of such a battery is extremely low, the microprocessor **60** does not detect any voltage at the clamps **8, 10**. A fault is displayed if an attempt is made to jump start a vehicle with this type of battery.

[0056] This type of fault may also be detected if there is no battery connected to clamps **8,10** or a poor connection is made to the depleted battery **11** and the jump starter is activated. When the fault occurs, the microprocessor **60** can be programmed to terminate the jump starting process and to display a suggestion to a user that the battery be reconditioned before jump starting is attempted or to check if the clam ps **8, 10** are properly connected to the battery **11**.

[0057] In another embodiment of the invention, the microprocessor **60** is programmed to determine the cold-cranking amps (CCA) available from the depleted battery **11**. CCA is the amount of power exerted by a battery when starting a vehicle on a cold day. The definition by Battery Council International (BCI) is the discharge load in amperes which a new fully charged battery at 0 degrees Farenheit can deliver for 30 seconds and maintain a voltage of 1.2 volts per cell or higher.

[0058] CCA is determined in the described embodiment by connecting a resistance in parallel with the battery **11**. The resistance should be connected for a short period of time so not to drain the battery. The voltage of the battery is determined when under the load of the resistance. The lower the voltage of the battery under the load is, the lower the CCA of the battery is. The microprocessor is programmed to correlate the measured voltage to a CCA value. The CCA value may then be displayed to the user.

[0059] If a battery has a shorted cell, it is unlikely that the battery voltage will increase as it is attempted to provide a charge to the battery and jump start the vehicle. However, a charge must be provided to the battery for some period of time before it can be determined if the battery has a shorted cell. The microprocessor **60** can be programmed to monitor the voltage, current, and time of charging to detect a shorted cell. If a charge rate of the battery is greater than a predetermined current, the battery has been charging more a predetermined amount of time, and the voltage of the battery is less than or equal to a predetermined voltage, a shorted cell is detected. For example, if the charge rate of the battery is greater than 2 amps, the battery has been charging for more than 1 hour, and the voltage of the battery is less than or equal to about 11 volts, the jump starting process is terminated, and a shorted cell fault is indicated to the user.

[0060] The process for detecting an open cell battery is similar to the process for detecting a shorted cell battery. An open cell battery has some voltage due to leakage between the open cell and its connectors. However, the open cell battery does not have the ability to either accept or deliver current. When the jump starter is connected to an open cell battery, the microprocessor detects a voltage at the clamps **8, 10**, but when the jump starting process begins, no appreciable current is detected. If no current is detected after a predetermined period of time, for example five minutes, an open cell battery is detected, the jump starting process is ended, and the appropriate fault displayed.

[0061] Many vehicles have interface ports for providing basic engine diagnostic data. The jump starter system may further have an interface for downloading basic engine diagnostic data from an interface port of such vehicles. The jump starter system may additionally have a printer port for printing information for record keeping or analysis. Memory inside the microprocessor **60** can be used for storing data that is used for later review and analysis.

[0062] Further, the microprocessor **60** may run a self-test on the booster to determine whether all components of the booster system are running properly. Each component is turned on and off quickly to determine if any malfunctions exist. Results of the self-test may be displayed on the display **64**. Buzzer **72** or another alarm may be activated to indicate any malfunctions.

[0063] Also, the microprocessor **60** can be programmed to sound the buzzer **72** or other alarm when there is information

shown on the display 64 and when there is an error/fault condition, such as detection of a low charge level of the changing battery 2 or detection of a bad alternator.

[0064] In another embodiment, the microprocessor 60 controls a de-sulfating process. The electrode plates of lead-acid vehicle batteries collect sulfur deposits over time which eventually render the battery useless. However, by removing the sulfur deposits from the plates, such a battery can be rejuvenated, that is, re-conditioned. It is known that battery reconditioning can be achieved by applying periodic short current bursts (on the order of microseconds) from the boosting battery 2 to the depleted battery 11. According to this embodiment of the invention, the microprocessor 60 is programmed to initiate the de-sulfating process through its control of the switch 12 and to display a "de-sulfating in progress" message on the display 64. An exemplary embodiment of circuitry that may be used to perform the de-sulfating process is shown in FIG. 6.

[0065] FIG. 6 includes many of the same components discussed above in regard to the preceding figures. In addition to those components, a transistor 84 is coupled to microprocessor 60 via resistor 86. Microprocessor 60 outputs a signal to a control electrode of transistor 84, turning transistor 84 on and off. When transistor 84 is turned on, current flows through resistors 88 and 90, turning on transistor 92. In turn, current flows through transistor 92, and resistors 94 and 96, turning on transistor 98. Transistor 98 acts as a switch for activating a pulse generating circuit 110 that generates a pulsing current used to condition the battery 11. When transistor 98 is in a conducting state, current flows through resistor 100, capacitor 102, inductor 104, and diode 106, which comprise the pulse generating circuit 110, to generate a current pulse.

[0066] The display 64, which may be, for example, a scrolling or flashing display, displays information available to the microprocessor 60 which may include, but which is not limited to, results of the self test, the status or condition (e.g., percent of charge) of the jump starter battery 2 as well as of the depleted 11, a "Warning: Reverse Polarity" message if a polarity of connections of the jump starter system is not correct, a "Ready to Start" message when everything is properly connected, a "De-Sulfating in Progress" message when a de sulfating process is in progress, and various other diagnostics including, for example, detection of a bad alternator, desired and actual pressure readings from those jump starter systems that have air compressors and/or pressure sensors, and freon gas leakage readings for those jump starter systems that have freon gas leakage sensors.

[0067] In summary, the microprocessor can be programmed to control the polarity protection operation, performing of diagnostics of the vehicle battery and other systems, scanning of the display, various functions of the microprocessor initiated by operator input through the input device, conducting a de-sulfating process, activating the buzzer or other alarm, detection of freon leaks, basic engine diagnostics which may interface with the vehicle's interface port, re-charging the jump starter battery, and inflation of tires based on a stored value or on user input. The above listing of functions is intended to be exemplary and is not exhaustive of the types of functions that the microprocessor can control in the context of the jump starter system disclosed herein. The embodiments illustrated and discussed in this specification are intended only to teach those skilled in the art the best way known to the inventors to make and use the invention. Nothing in this specification should be considered as limiting the scope of the present invention. The above-described embodiments of the invention may be modified or varied, and elements added or omitted, without departing from the invention, as appreciated by those skilled in the art in light of the above teachings. It is therefore to be understood that, within the scope of the claims and their equivalents, the invention may be practiced otherwise than as specifically described.

We claim:

1. A polarity detection circuit, comprising:

cables for connecting a first battery to a depleted battery;

a polarity sensing circuit coupled to the first battery for providing an enable signal when a correct polarity connection is made between the first battery and the depleted battery; and

a solid state switch coupled to the polarity sensing circuit, the solid state switch permitting current flow between the first battery and the depleted battery when it receives the enable signal.

2. The polarity detection circuit of claim 1, further comprising:

a safety switch that when activated prevents the solid state switch from permitting current flow between the first battery and the depleted battery.

3. The polarity detection circuit of claim 1, wherein the polarity sensing circuit comprises an opto-isolator.

4. The polarity detection circuit of claim 1, wherein the polarity sensing circuit comprises an LED coupled to one of the cables, the diode being forward biased when a correct polarity connection is made between the first battery and the depleted battery; and

a phototransistor coupled to the diode, current flow through the forward biased LED turning on the phototransistor to provide the enable signal.

5. The polarity detection circuit of claim 1, wherein the solid state switch comprises at least one transistor.

6. The polarity detection circuit of claim 5, wherein the current from the first battery flows through the at least one transistor to the depleted battery.

7. The polarity detection circuit of claim 1, wherein the solid state switch comprises at least one FET having a control electrode, the control electrode receiving the enable signal to place the FET into a conducting state.

8. The polarity detection circuit of claim 7, wherein the FET is a part of a current path between the first battery and the depleted battery.

9. The polarity detection circuit of claim 1, further comprising a frequency generator coupled to one of the cables and injecting a signal of a predetermined frequency into that cable.

10. The polarity detection circuit of claim 9, further comprising a frequency detector coupled to the other one of the cables, the frequency detector preventing the solid state switch from permitting current flow between the first battery and the depleted battery when the frequency detector ceases to detect the signal of predetermined frequency injected by the frequency generator.

11. A booster apparatus, comprising:

a first battery having a positive terminal and a negative terminal;

a first cable coupled to the positive terminal of the first battery and being provided with means for connecting to a terminal of a depleted battery;

a second cable coupled to the negative terminal of the first battery and being provided with means for connecting to another terminal of the depleted battery;

a solid state switch coupled in series with one of the cables and the first battery;

a polarity sensing circuit coupled between the first cable and the second cable, the polarity sensing circuit providing an enable signal to place the solid state switch in a conducting state when a correct polarity connection is made between the first battery and the depleted battery.

12. The booster apparatus of claim 11, wherein only a single cable is connected to each terminal of the depleted battery.

13. The booster apparatus of claim 11, wherein the solid state switch comprises a plurality of transistors connected in parallel with each other between one of the means for connecting and one of the terminals of the first battery.

14. The booster apparatus of claim 13, wherein the transistors are a part of a current path between the first battery and the depleted battery.

15. The booster apparatus of claim 11, further comprising:

a frequency generator coupled to one of the first and second cables and injecting a frequency into that cable; and

a frequency detector coupled to the other one of the first and second cables, the frequency detector opening the solid state switch when the frequency detector ceases to detect the frequency from the frequency generator.

16. The booster apparatus of claim 11, further comprising a microprocessor coupled to the solid state switch and the polarity sensing circuit and being responsive to the enable signal from the polarity sensing circuit to control the solid state switch to enable a current flow between the first battery and the depleted battery.

17. The booster apparatus of claim 16, wherein the depleted battery is intended for use in a vehicle.

18. The booster apparatus of claim 16, further comprising a display coupled to the microprocessor for displaying selected outputs of the microprocessor and an input device for accepting operator inputs to the microprocessor for controlling the jump starter system.

19. The booster apparatus of claim 16, further comprising at least one sensor connected to an input of the microprocessor for producing a signal representing a measured value.

20. The booster apparatus of claim 16, further comprising an audible alarm connected to an output of the microprocessor, wherein the microprocessor is connected to the first battery for automatically measuring the voltage of the first battery and producing a signal to activate the alarm when the voltage of the first battery is below a predetermined level.

21. The booster apparatus of claim 18, further comprising an air compressor controlled by an output of the microprocessor.

22. The booster apparatus of claim 21, wherein the microprocessor is programmed to accept a desired tire inflation pressure value input by an operator via the input device and to display the desired pressure on the display, the microprocessor automatically controlling the air compressor to inflate a tire to the desired pressure by comparing a measured pressure of the tire to the desired pressure until the desired pressure is attained.

23. The booster apparatus of claim 16, wherein the polarity sensing circuit comprises an opto-isolator.

24. The booster apparatus of claim 23, wherein the opto-isolator includes a uni-directional current conducting, light emitting component that only conducts current when the battery cables connect the positive terminal of the first battery to the positive terminal of the depleted battery and the negative terminal of the first battery to the negative terminal of the depleted battery.

25. The booster apparatus of claim 16, further comprising:

a safety switch opening the solid state switch to thus disable current flow between the first battery and the depleted battery.

26. The booster apparatus of claim 16, further comprising:

a high voltage providing circuit for keeping the solid state switch in a conducting state even if the voltage of the first battery decays to a low level.

27. The booster apparatus of claim 25, further comprising:

an indicator for indicating that the cables can be safely removed from the depleted battery.

28. The booster apparatus of claim 16, further comprising:

an indicator for indicating that a correct polarity connection is made between the first battery and the depleted battery.

29. The booster apparatus of claim 16, further comprising:

a measurement device for measuring the voltage of at least one of the first battery and the depleted battery.

30. The booster apparatus of claim 29, wherein the voltage is measured at least one of before the depleted battery is charged and after the depleted battery is charged.

31. The booster apparatus of claim 16, further comprising:

a de-sulfating circuit controlled by the microprocessor for de-sulfating a battery.

32. The booster apparatus of claim 16, further comprising means for detecting a voltage surge after the depleted battery is jump started.

33. The booster apparatus of claim 16, wherein the microprocessor is programmed to detect a voltage surge after the depleted battery is jump started.

34. A portable booster apparatus, comprising:

means for providing power;

means for connecting the means for providing power to a depleted battery;

means for detecting polarity of the connection between the means for providing power and the depleted battery and for generating an enable signal when a correct polarity is detected; and

at least one FET having a control electrode and being coupled to the means for detecting polarity, the control electrode receiving the enable signal and placing the FET into a conducting state to allow current flow between the means for providing power and the depleted battery.

35. The booster apparatus of claim 34, further comprising means for indicating a correct polarity connection to a user.

36. The booster apparatus of claim 35, wherein the means for indicating comprises a LED.

37. The booster apparatus of claim 34, further comprising means for interrupting current flow after a correct polarity connection has been established.

38. The booster apparatus of claim 37, further comprising at least one sensor connected to an input of the microprocessor for producing a measured signal representing the presence of the depleted battery at the means for connecting and wherein the means for interrupting comprises a microprocessor programmed to place the FET in a non-conducting state if no depleted battery is present.

39. The booster apparatus of claim 38, wherein the microprocessor is programmed to place the at least one FET in a non-conducting state, then check the measured signal about once every second, and place the at least one FET in a conducting state if a depleted battery is present.

40. The booster apparatus of claim 37, wherein the means for interrupting comprises a momentary switch adapted to short circuit the control electrode of the FET when depressed.

41. The booster apparatus of claim 37, further comprising an indicator for indicating when current flow has been interrupted.

42. The booster apparatus of claim 34, further comprising:

means for injecting a signal of a predetermined frequency into the means for connecting; and

means for detecting frequency coupled to the means for connecting on an opposite side of the depleted battery than the means for injecting, the means for detecting placing the FETs into a non-conducting state when the means for detecting ceases to detect the frequency from the means for injecting.

43. The booster apparatus of claim 34, wherein the means for detecting polarity comprises an opto-isolator.

44. A jump starter system, comprising:

a first battery having positive and negative terminals;

a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the first battery and second ends adapted for connection to positive and negative terminals of a depleted battery;

means for measuring a charge rate of the depleted battery;

means for determining an amount of time the depleted battery has been charging;

means for measuring a voltage of the depleted battery; and

means for detecting at least one of an overtime fault, a shorted cell battery fault, a bad battery fault, and an open cell battery fault based on at least one of the charge rate, amount of time and voltage of the depleted battery.

45. The charger claim 44, further comprising a display on which fault is visually indicated.

46. The charger of claim 44, wherein the means for detecting detects the overtime fault if the charge rate is greater than a predetermined current, the depleted battery has been charging longer than a predetermined amount of time, and the voltage of the depleted battery is greater than or equal to a predetermined voltage.

47. The charger claim 46, wherein the predetermined current is 2 amps, the predetermined time is 18 hours, and the predetermined voltage is 12 volts.

48. The charger of claim 44, wherein the means for detecting detects the shorted cell battery fault if the charge current is greater than a predetermined current, the depleted battery has been charging more a predetermined amount of time, and the voltage of the depleted battery is less than or equal to a predetermined voltage.

49. The charger claim 48, wherein the predetermined time is 1 hour, and the predetermined voltage is 11 volts.

50. The charger of claim 44, wherein the means for detecting detects the bad battery fault if no voltage is detected at the means for measuring.

51. The charger of claim 44, wherein the means for detecting detects the open cell battery fault if the charge current is less than a predetermined current, the depleted battery has been charging more a predetermined amount of time, and the voltage of the depleted battery is greater than or equal to a predetermined voltage.

52. A computer-readable information storage medium for use with a computer controlling a jump starter system, comprising a first battery having positive and negative terminals, a pair a battery cables having first ends connected to the positive and negative terminals, respectively, of the first battery and second ends adapted for connection to positive and negative terminals of a depleted battery, the computer-readable information storage medium storing computer-readable program code for causing the computer to perform the steps of:

measuring a charge rate of the depleted battery;

determining an amount of time the depleted battery has been charging;

measuring a voltage of the depleted battery; and

detecting at least one of an overtime fault, a shorted cell battery fault, a bad battery fault, an open cell battery fault, and an alternator fault based on at least one of the charge rate, amount of time and voltage of the battery.

53. The computer-readable information storage medium of claim 52 further comprising code for causing the computer to perform the step of visually indicating the fault on a display.

54. The computer-readable information storage medium of claim 52 further comprising code for causing the computer to perform the step of detecting the overtime fault if the charge rate is greater than a predetermined current, the depleted battery has been charging longer than a predetermined amount of time, and the voltage of the depleted battery is greater than or equal to a predetermined voltage.

55. The computer-readable information storage medium of claim 54, wherein the predetermined current is 2 amps, the predetermined time is 18 hours, and the predetermined voltage is 12 volts.

56. The computer-readable information storage medium of claim 52 further comprising code for causing the computer to perform the step of detecting the shorted cell battery fault if the charge current is greater than a predetermined current, the depleted battery has been charging more a

predetermined amount of time, and the voltage of the depleted battery is less than or equal to a predetermined voltage.

57. The computer-readable information storage medium of claim 56, wherein the predetermined time is 1 hour, and the predetermined voltage is 11 volts.

58. The computer-readable information storage medium of claim 52 further comprising code for causing the computer to perform the steps of:

indicating the bad battery fault if no voltage is detected at the second ends of the cables; and

proceeding with a charging operation if a voltage is detected at the second ends of the cables.

59. The computer-readable information storage medium of claim 52 further comprising code for causing the computer to perform the step of detecting the open cell battery fault if the charge current is less than a predetermined current, the depleted battery has been charging more a predetermined amount of time, and the voltage of the depleted battery is greater than or equal to a predetermined voltage.

60. The computer-readable information storage medium of claim further comprising code for causing the computer to perform steps of:

checking for a rapid rise in voltage after the vehicle has been started;

indicating the alternator is working properly if the rapid rise in voltage is present; and

indicating the alternator is not working properly if the rapid rise in voltage is not present.

* * * * *

1.2MHZ，26V Step-up DC/DC Converter

GENERAL DESCRIPTION

The XR3403 is a high frequency, high efficiency DC to DC converter with an integrated 3A, 0.1Ω power switch capable of providing an output voltage up to 26V. The fixed 1.2MHz allows the use of small external inductions and capacitors and provides fast transient response. It integrates Soft start, Comp,. only need few components outside. It can be adjusted SW current limit by one resistor.

FEATURES

- 2.3V to 6V input voltage Rangel
- Efficiency up to 96%
- 26V Boost converter with adjusted switch current
- 1.2Mhz fixed Switching Frequency
- Integrated soft-start
- Thermal Shutdown
- Under voltage Lockout
- SOT23-6 Package

APPLICATIONS

- Handheld Devices
- GPS Receiver
- Digital Still Camera
- Portable Applications
- DSL Modem
- PCMCIA Card
- TFT LCD Bias Supply

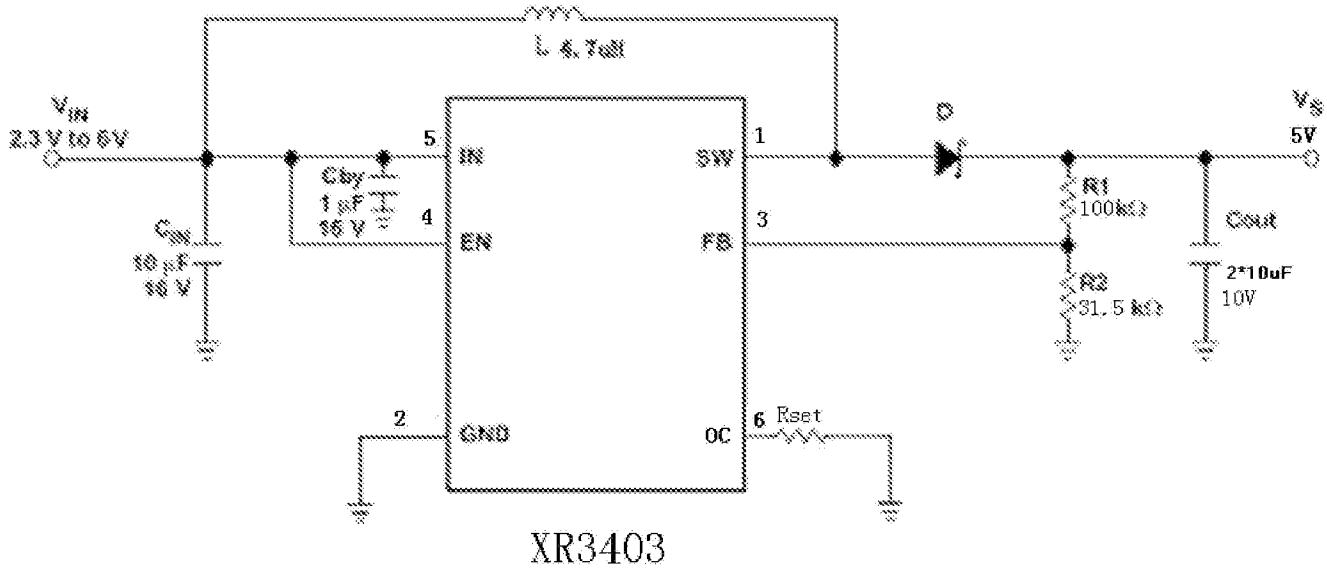


Figure 1. Typical Application Circuit

ADC EX1002
IPR2025-00885
CAFC IPA-ITC-05242

ORDERING INFORMATION

PART NUMBER	TEMP RANGE	SWICHING FREQUENCY	OUTPUT VOLTAGE (V)	ILIM (A)	PACKAGE	PINS
XR3403	-40°C to 85°C	1.2MHZ	ADJ	ADJ	SOT23-6	6

PIN CONFIGURATION

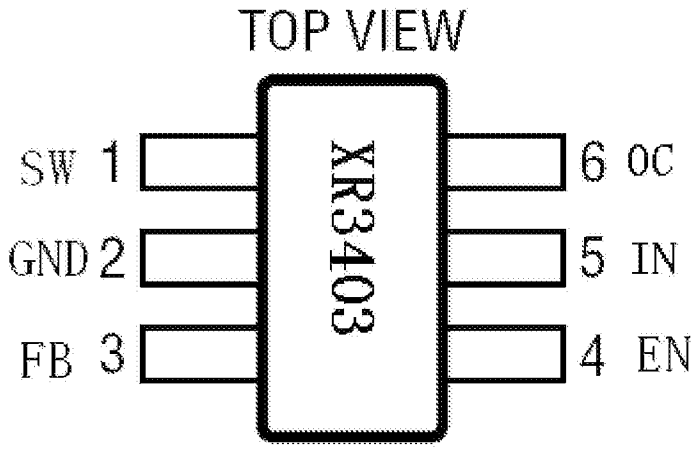


Figure 2. PIN Configuration

PIN DESCRIPTION

PIN NUMBER	PIN NAME	PIN DESCRIPTION
1	SW	Switch pin
2	GND	Ground
3	FB	Feedback pin
4	EN	Shutdown control input., Connect this pin to logic high level to enable the device
5	IN	Input power supply pin
6	OC	SW current limit setting pin, Set current limit by Rset

ABSOLUTE MAXIMUM RATINGS

(Note: Do not exceed these limits to prevent damage to the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.)

PARAMETER	VALUE	UNIT
Supply Voltage VIN	-0.3 to 6.5	V
FB, EN Voltage	-0.3 to VIN+0.3	V
SW Voltage	Vin+0.3 to 28V	V
Operating Ambient Temperature	-40 to 85	°C

ADC EX1002
IPR2025-00885
CAR RPA-ITC-05243

Maximum Junction Temperature	150	°C
Storage Temperature	-55 to 150	°C
Lead Temperature (Soldering, 10 sec)	300	°C

ELECTRICAL CHARACTERISTICS

(V_{IN} = 3.6V, T_A= 25°C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage Range	V_{IN}		2.3		6.0	V
Boost output voltage range	Vout		26			V
UVLO Threshold	V_{UVLO}	$V_{HYSTERESIS}$ =100mV	2.1	2.2	2.3	V
Operating Supply Current	I_{SUPPLY}	V_{FB} =1.3V， EN=Vin, I_{Load} =0		75	135	µA
Shutdown Supply Current		V_{EN} =0V, V_{IN} =4.2V		0.1	1	
Regulated Feedback Voltage	V_{FB}		1.188	1.2	1.212	V
Peak Inductor Current limit (N-MOSFET Current limit)	I_{lim}	Rset=150K Vin=3.3V Vout=5V	0.8	1	1.2	A
Peak Inductor Current limit (N-MOSFET Current limit)	I_{lim}	Rset=500K Vin=3.3V Vout=5V	2.2	2.55	2.9	A
Oscillator Frequency	F_{OSC}		0.9	1.2	1.5	MHz
Rds(ON) of N-channel FET		I_{SW} =-100mA		0.1	0.2	Ohm
Enable Threshold		V_{IN} = 2.3V to 5.5V	0.3	1	1.5	V
Enable Leakage Current			-0.1		0.1	µA
SW Leakage Current		V_{EN} = 0V, V_{SW} = 0V or 5V, V_{IN} = 5V			1	uA

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-05244

DETAILED DESCRIPTION

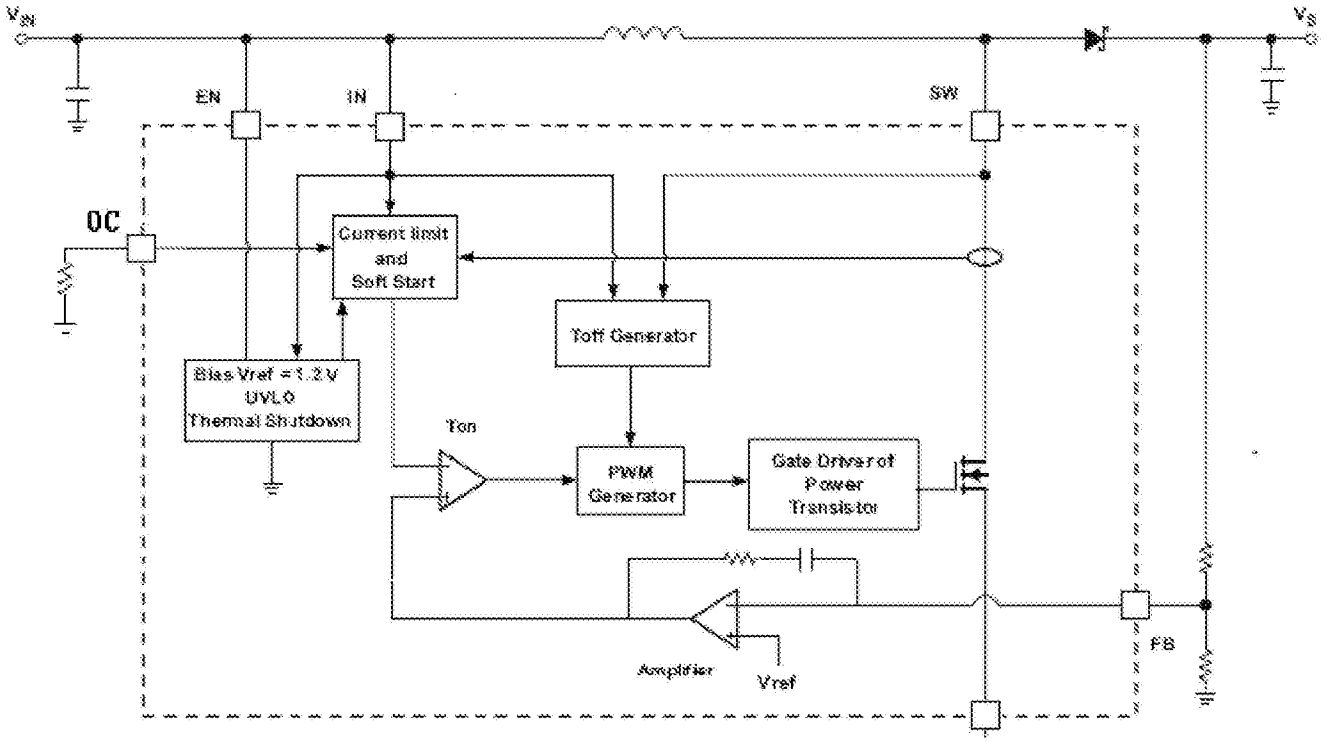


Figure 3. Functional Block Diagram

FUNCTIONAL DESCRIPTION

NORMAL OPERATION

The boost converter is designed for output voltage up to 26V with a switch MAX peak current limit of 4 A. The device, which operates in a current mode scheme with quasi-constant frequency, is externally 1.2MHZ and the minimum input voltage is 2.3 V. To control the inrush current at start-up a soft-start pin is available.

During the on-time, the voltage across the inductor causes the current in it to rise. When the current reaches a threshold value set by the internal GM amplifier, the power transistor is turned off, the energy stored into the inductor is then released and the current flows through the Schottky diode towards the output of the boost converter. The off-time is fixed for a certain Vin and Vs, and therefore maintains the same frequency when varying these parameters.

However, for different output loads, the frequency may slightly change due to the voltage drop across the Rdson of the power transistor which will have an effect on the voltage across the inductor and thus on T_{on} (T_{off} remains fixed). Some slight frequency changes might also appear with a fixed output load due to the fact that the output voltage Vs is not sensed directly but via the SW Pin, which affects accuracy.

Because of the quasi-constant frequency behavior of the device , the XR3403 eliminates the need for an internal oscillator and slope compensation, which provides better stability for the system over a wide of input and output voltages range, and more stable and accurate current limiting operation compared to boost converters operating with a conventional PWM scheme .The XR3403 topology has also the benefits of providing very good load and line regulations, and excellent load transient response.

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UNDERVOLTAGE LOCKOUT (UVLO)

To avoid mis-operation of the device at low input voltages an under voltage lockout is included that disables the device, if the input voltage falls below 2.2V

THERMAL SHUTDOWN

A thermal shutdown is implemented to prevent damages due to excessive heat and power dissipation. Typically the thermal shutdown threshold is 150℃ .When the thermal shutdown is triggered the device stops switching until the temperature falls below typically 136 ℃ .Then the device starts switching again.

APPLICATION INFORMATION

INDUCTOR SELECTION

In normal operation, the inductor maintains continuous current to the output. The inductor current has a ripple that is dependent on the inductance value. The high inductance reduces the ripple current.

Selected inductor by actual application:

Manufacturer	*Part Number*	*Inductance(uH)*	*DRC max (Ohms)*	*Dimensions L*W*H(mm3)*
Murata	LQH44PN	2.2	0.049	4*4*1.7
		3.3	0.065	
		4.7	0.08	
		10	0.16	
	LQH5BP	2.2	0.030	5*5*2
		3.3	0.044	
		4.7	0.058	
		10	0.106	
TDK	SPM6530T	2.2	0017	7.1*6.5*3
		3.3	0.027	
		4.7	0.036	
	VLP6045LT	2.2	0.020	6*6*4.5
		3.3	0.025	
		4.7	0.029	
		10	0.055	
WURTH	74437324022	2.2	0.061	4.4*4.05
	744777004	4.7	0.025	7.3*7.3*4.5

Table 1. Recommend Surface Mount Inductors

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CAR IPR-ITC-05246

If output voltage is 5V , you can use 2.2uH~ 4.7uH, If output voltage is 12V, 4.7uH~ 10uH is OK, if 24V ,maybe need 10uH

Normal application: Input 3.3V (3.6V or 4.2V) to Output 5V 9V 12V 24V;

Input 5V to Output 9V 12V 24V

Notes: Please select inductor according to Ilim. The IL need to be 1.5~2*Ilim. For getting higher efficiency, need to use low DRC inductors.

INPUT CAPACITOR SELECTION

The input capacitor reduces input voltage ripple to the converter, low ESR ceramic capacitor is highly recommended. For most applications, a 10uF capacitor is used. The input capacitor should be placed as close as possible to VIN and GND. Such as Murata GRM21BR60J106 or TDK C3216X5R1A106M

OUTPUT CAPACITOR SELECTION

A low ESR output capacitor is required in order to maintain low output voltage ripple. In the case of ceramic output capacitors, capacitor ESR is very small and does not contribute to the ripple, so a lower capacitance value is acceptable when ceramic capacitors are used. A 10uF、22uF or two 10uF ceramic output capacitor is suitable for most applications. Such as Murata GRM21BR60J226\ GRM21BR60J106 or TDK C3216X5R1A226M\ C3216X5R1A106M

OUTPUT VOLTAGE PROGRAMMING

In the adjustable version, the output voltage is set by a resistive divider according to the following equation:

$$R_1 = R_2 \times \left(\frac{V_{OUT}}{1.2} - 1 \right)$$

Typically choose R2=10K and determine R1 from the following equation:

OC SETTING(SETTING CURRENT LIMIT)

XR3403 can be adjusted SW current limit by one resistor connected with OC pin。The setting sheet is as below(Vin=3.3V Vout=5V)---Only list the typical Ilim number，the actual data may be in +/- 20% above them because of some discrete data from IC and resistor.

Rset (ohm)	Ilim(typ)
500K	2.7A
400K	2.5A
300K	2.3A
250K	2.1A
200K	1.5A
180K	1.3A
150K	1A
120K	0.7A
100K	0.45A

. For 3V~4.2Vin to 5V 1A out , 230K~250Kohm is suitable.

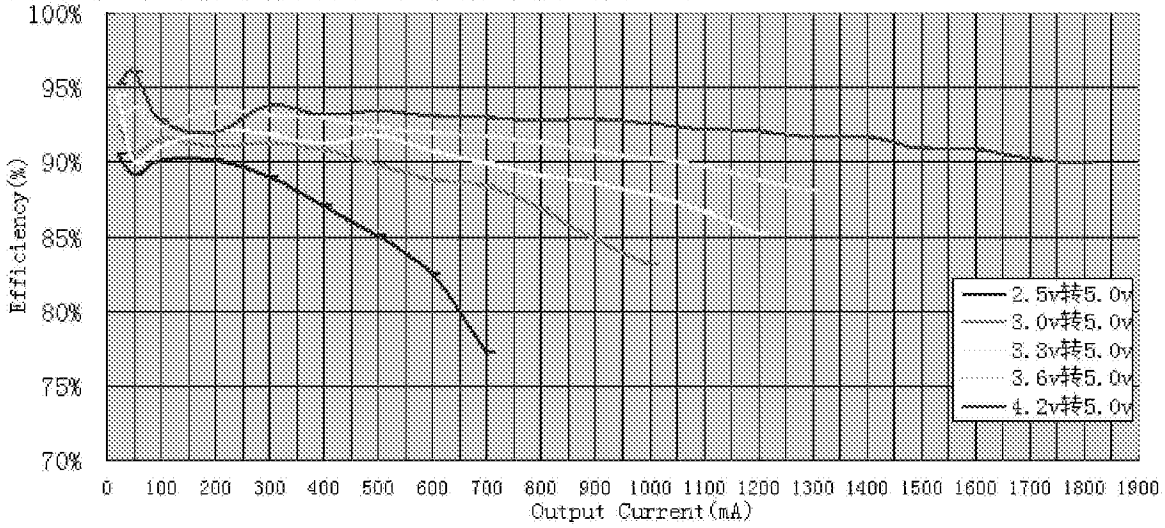
ADC EX1002
IPR2025-00885
CAR-PPA-ITC-05247

DIODE SELECTION

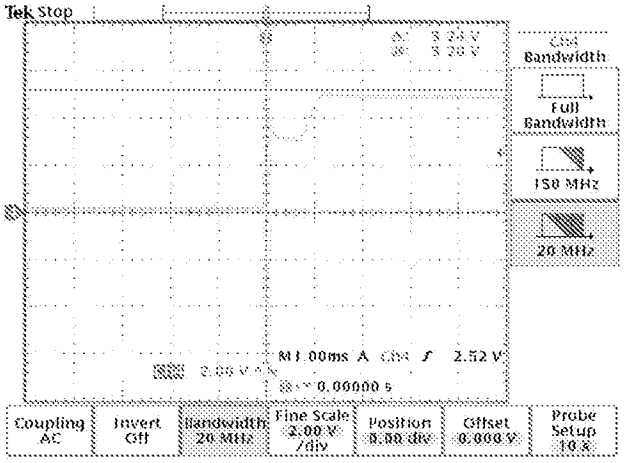
According to max Iout and max Vout, you can select suitable diode. Normally we select diode If=(1.5~2)*Ioutmax and VR=(1.5~2)*Voutmax. For high efficiency, suggest that you select low Vf Schottky diode. ONsemi's MBRA210LT3 is prefer

TYPICAL PERFORMANCE CHARACTERISTICS

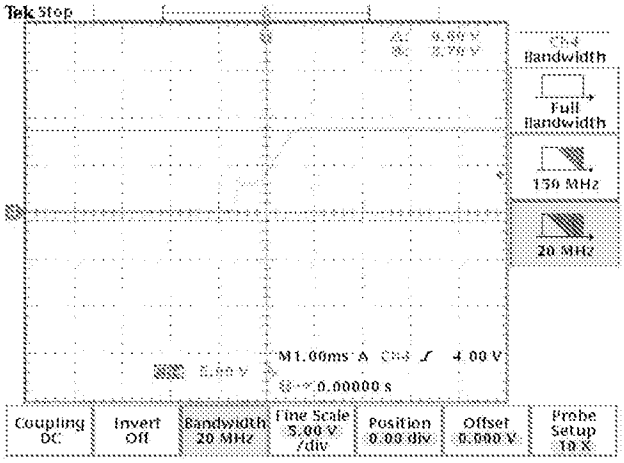
(L=2.2uH 4A, CIN=10uF, COUT=2*10uF, if not mentioned)



Efficiency vs. Output Current (Vout=5V Rset=300K)



STARTUP (3.3V IN 5V 500MA OUT)

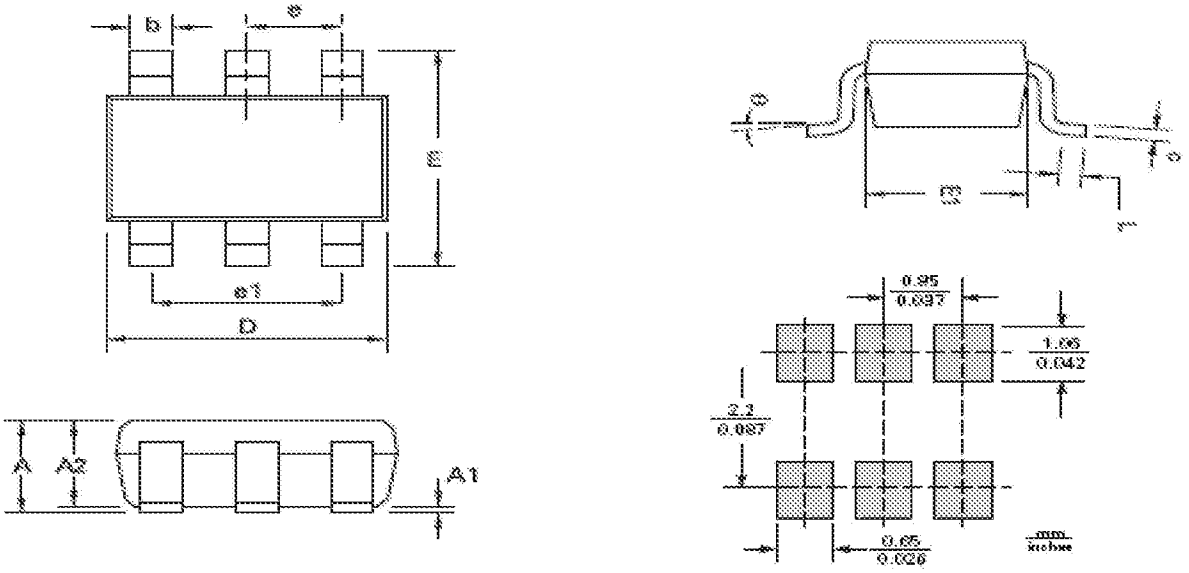


STARTUP(3.3V IN 9V 500MA OUT)

ADC EX1002
IPR2025-00885
CAR PPA-ITC-05248

PACKAGE OUTLINE

SOT23-6 PACKAGE OUTLINE AND DIMENSIONS



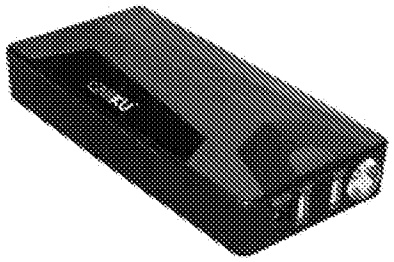
DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.45	0.0354	0.0570
A1	0.00	0.15	0.00	0.0059
A2	0.90	1.30	0.0354	0.0511
b	0.35	0.50	0.0078	0.0196
C	0.09	0.26	0.0035	0.0102
D	2.70	3.10	0.1062	0.1220
E	2.20	3.20	0.0866	0.1181
E1	1.30	1.80	0.0511	0.0708
L	0.10	0.60	0.0039	0.0236
e	0.95 REF		0.0374 REF	
e1	1.90 REF		0.0748 REF	
L	0°	30°	0°	30°

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

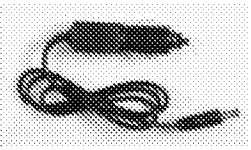
ADC EX1002
IPR2025-00885
CAR RPA-ITC-05249

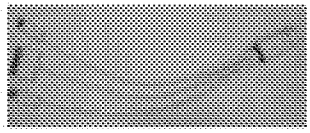
CARKU 卡儿酷
SHENZHEN CARKU TECHNOLOGY CO.,LTD
Tel: 0086 755 23063587-877 E-mail: sales10@car-ku.com

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*6cm Whole set Weight: 1KG	
Carton	Size : 39.3*32*28cm, 0.07cbm/CTN
	Packing Rate: 10sets/CTN
	G.W.= 10 KG

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

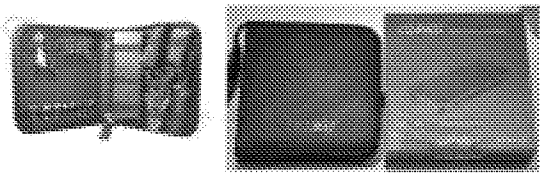
Model: Epower-21

Specification		
Battery Capacity	66.6Wh (18000mAh)	
Dimension	230*87*27mm	
Weight	615g	
Output	5V/1A ---mobile phone, tablet PC, other digital devices 5V/2A --- tablet PC 12V/10A ---12V car electronic products（car air-compressor etc.） 19V/3.5A ---Laptop 12V car Jump Start	
Input	14V/1A	
Start Current	300A	
Peak Current	600A	
Operation Temp.	-20℃~60℃/-4℉~140℉	

Standard Accessories	
1pc Home charger	Input: AC/100V-240V ， Output: DC/14V1A
1pc Car charger	Input / Output: DC 14V1A
1pc Smart cable	For Jump start 12V vehicle use
8pcs Notebook connectors + 1pc switch cable	LENOVO，SONY，IBM，ACER，HP，DELL，SAMSUNG，NEC，…
3-in-1 Mobile Phone Cable	Micro USB, iPhone4, iPhone5
1pc User Manual	



Accessories for choice		
Cigar Socket Cable	12V10Aoutput switch cable	

Packing	
Individual Packing : PU Bag + Color box Size：250*267*62mm Whole set Weight: 1.5KG	
Carton	Size : 51.5*32*29.5cm, 0.07cbm/CTN
	Packing Rate: 10sets/CTN
	G.W.= 17 KG

FAIRCHILD SEMICONDUCTOR®

MC78XX/LM78XX/MC78XXA

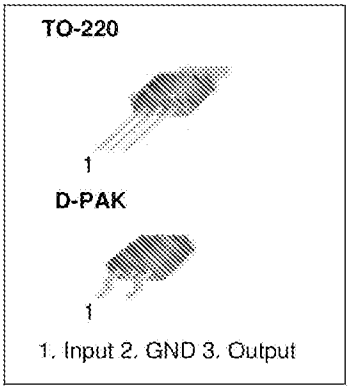
3-Terminal 1A Positive Voltage Regulator

Features

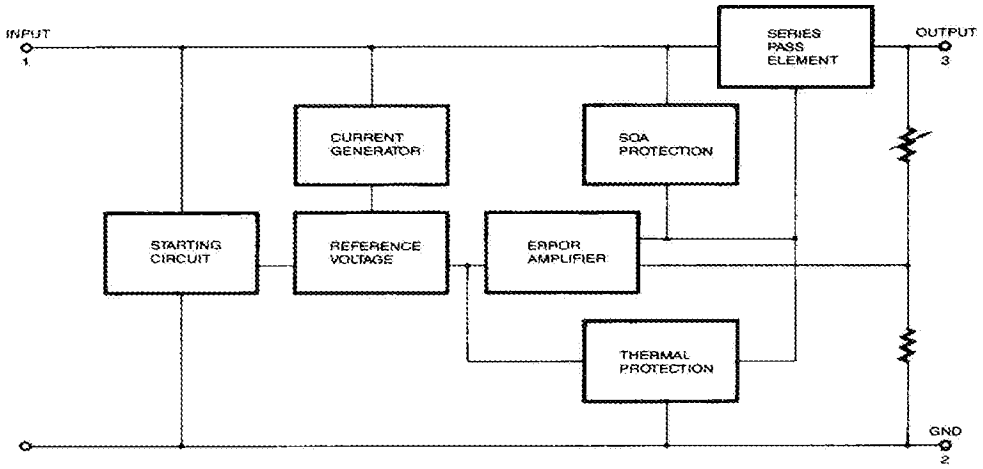
- Output Current up to 1A
- Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area Protection

Description

The MC78XX/LM78XX/MC78XXA series of three terminal positive regulators are available in the TO-220/D-PAK package and with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut down and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.



Internal Block Digram



Rev. 1.0.1

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ADC EX1002
IPR2025-00885
CAR IPR-ITC-04706

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage (for V_O = 5V to 18V) (for V_O = 24V)	V_I V_I	35 40	V V
Thermal Resistance Junction-Cases (TO-220)	$R_{\theta JC}$	5	°C/W
Thermal Resistance Junction-Air (TO-220)	$R_{\theta JA}$	65	°C/W
Operating Temperature Range	T_{OPR}	0 ~ +125	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

Electrical Characteristics (MC7805/LM7805)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I = 10V, C_I= 0.33μF, C_O= 0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7805/LM7805			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		4.8	5.0	5.2	V
		5.0mA ≤ Io ≤ 1.0A, P_O ≤ 15W V_I = 7V to 20V		4.75	5.0	5.25	
Line Regulation (Note1)	Regline	T_J=+25 °C	V_O = 7V to 25V	-	4.0	100	mV
			V_I = 8V to 12V	-	1.6	50	
Load Regulation (Note1)	Regload	T_J=+25 °C	I_O = 5.0mA to1.5A	-	9	100	mV
			I_O =250mA to 750mA	-	4	50	
Quiescent Current	I_Q	T_J =+25 °C		-	5.0	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	0.03	0.5	mA
		V_I= 7V to 25V		-	0.3	1.3	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O= 5mA		-	-0.8	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A=+25 °C		-	42	-	μV/Vo
Ripple Rejection	RR	f = 120Hz V_O = 8V to 18V		62	73	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	15	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35V, T_A =+25 °C		-	230	-	mA
Peak Current	I_{PK}	T_J =+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-04707

Electrical Characteristics (MC7806)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =11V, C_I= 0.33μF, C_O= 0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7806			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		5.75	6.0	6.25	V
		5.0mA ≤ I_O ≤ 1.0A, P_O ≤ 15W V_I = 8.0V to 21V		5.7	6.0	6.3	
Line Regulation (Note1)	Regline	T_J =+25 °C	V_I = 8V to 25V	-	5	120	mV
			V_I = 9V to 13V	-	1.5	60	
Load Regulation (Note1)	Regload	T_J =+25 °C	I_O =5mA to 1.5A	-	9	120	mV
			I_O =250mA to750A	-	3	60	
Quiescent Current	I_Q	T_J =+25 °C		-	5.0	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		-	-	0.5	mA
		V_I = 8V to 25V		-	-	1.3	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-0.8	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	45	-	μV/Vo
Ripple Rejection	RR	f = 120Hz V_I = 9V to 19V		59	75	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	19	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A=+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J =+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-IPR-ITC-04708

Electrical Characteristics (MC7808)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =14V, C_I= 0.33µF, C_O= 0.1µF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7808			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		7.7	8.0	8.3	V
		5.0mA ≤ I_O ≤ 1.0A, P_O ≤ 15W V_I = 10.5V to 23V		7.6	8.0	8.4	
Line Regulation (Note1)	Regline	T_J =+25 °C	V_I = 10.5V to 25V	-	5.0	160	mV
			V_I = 11.5V to 17V	-	2.0	80	
Load Regulation (Note1)	Regload	T_J =+25 °C	I_O = 5.0mA to 1.5A	-	10	160	mV
			I_O= 250mA to 750mA	-	5.0	80	
Quiescent Current	I_Q	T_J =+25 °C		-	5.0	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	0.05	0.5	mA
		V_I = 10.5A to 25V		-	0.5	1.0	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-0.8	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	52	-	µV/Vo
Ripple Rejection	RR	f = 120Hz, V_I= 11.5V to 21.5V		56	73	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J=+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	17	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	230	-	mA
Peak Current	I_{PK}	T_J =+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-IPR-ITC-04709

Electrical Characteristics (MC7809)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =15V, C_I= 0.33µF, C_O= 0.1µF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7809			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25°C		8.65	9	9.35	V
		5.0mA≤ I_O ≤1.0A, P_O ≤15W V_I= 11.5V to 24V		8.6	9	9.4	
Line Regulation (Note1)	Regline	T_J=+25°C	V_I = 11.5V to 25V	-	6	180	mV
			V_I = 12V to 17V	-	2	90	
Load Regulation (Note1)	Regload	T_J=+25°C	I_O = 5mA to 1.5A	-	12	180	mV
			I_O = 250mA to 750mA	-	4	90	
Quiescent Current	I_Q	T_J=+25°C		-	5.0	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	-	0.5	**mA**
		V_I = 11.5V to 26V		-	-	1.3	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-1	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	58	-	µV/Vo
Ripple Rejection	RR	f = 120Hz V_I = 13V to 23V		56	71	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J=+25°C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	17	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25°C		-	250	-	mA
Peak Current	I_{PK}	T_J= +25°C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
GAP PPA-ITC-04710

Electrical Characteristics (MC7810)

(Refer to test circuit ,0°C< T_J < 125°C, I_O = 500mA, V_I =16V, C_I= 0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7810			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		9.6	10	10.4	V
		5.0mA ≤ I_O≤1.0A, P_O ≤15W V_I = 12.5V to 25V		9.5	10	10.5	
Line Regulation (Note1)	Regline	T_J =+25°C	V_I = 12.5V to 25V	-	10	200	mV
			V_I = 13V to 25V	-	3	100	
Load Regulation (Note1)	Regload	T_J =+25°C	I_O = 5mA to 1.5A	-	12	200	mV
			I_O = 250mA to 750mA	-	4	400	
Quiescent Current	I_Q	T_J =+25°C		-	5.1	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	-	0.5	mA
		V_I = 12.5V to 29V		-	-	1.0	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-1	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	58	-	μV/Vo
Ripple Rejection	RR	f = 120Hz V_I = 13V to 23V		56	71	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J=+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	17	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35V, T_A=+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J =+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-04711

Electrical Characteristics (MC7812)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =19V, C_I= 0.33µF, C_O=0.1µF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7812			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		11.5	12	12.5	V
		5.0mA ≤ I_O≤1.0A, P_O≤15W V_I = 14.5V to 27V		11.4	12	12.6	
Line Regulation (Note1)	Regline	T_J =+25 °C	V_I = 14.5V to 30V	-	10	240	mV
			V_I = 16V to 22V	-	3.0	120	
Load Regulation (Note1)	Regload	T_J =+25 °C	I_O = 5mA to 1.5A	-	11	240	mV
			I_O = 250mA to 750mA	-	5.0	120	
Quiescent Current	I_Q	T_J =+25 °C		-	5.1	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	0.1	0.5	mA
		V_I = 14.5V to 30V		-	0.5	1.0	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-1	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	76	-	µV/Vo
Ripple Rejection	RR	f = 120Hz V_I = 15V to 25V		55	71	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J=+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	18	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35V, T_A=+25 °C		-	230	-	mA
Peak Current	I_{PK}	T_J = +25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-IPR-ITC-04712

Electrical Characteristics (MC7815)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =23V, C_I= 0.33µF, C_O=0.1µF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7815			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		14.4	15	15.6	V
		5.0mA ≤ I_O ≤ 1.0A, P_O ≤ 15W V_I = 17.5V to 30V		14.25	15	15.75	
Line Regulation (Note1)	Regline	T_J =+25 °C	V_I = 17.5V to 30V	-	11	300	mV
			V_I = 20V to 26V	-	3	150	
Load Regulation (Note1)	Regload	T_J =+25 °C	I_O = 5mA to 1.5A	-	12	300	mV
			I_O = 250mA to 750mA	-	4	150	
Quiescent Current	I_Q	T_J =+25 °C		-	5.2	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	-	0.5	mA
		V_I = 17.5V to 30V		-	-	1.0	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-1	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	90	-	µV/Vo
Ripple Rejection	RR	f = 120Hz V_I = 18.5V to 28.5V		54	70	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J=+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	19	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35V, T_A=+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J =+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-IPR-ITC-04713

Electrical Characteristics (MC7818)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =27V, C_I= 0.33µF, C_O=0.1µF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7818			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		17.3	18	18.7	V
		5.0mA ≤ I_O ≤1.0A, P_O ≤15W V_I = 21V to 33V		17.1	18	18.9	
Line Regulation (Note1)	Regline	T_J =+25 °C	V_I = 21V to 33V	-	15	360	mV
			V_I = 24V to 30V	-	5	180	
Load Regulation (Note1)	Regload	T_J =+25 °C	I_O = 5mA to 1.5A	-	15	360	mV
			I_O = 250mA to 750mA	-	5.0	180	
Quiescent Current	I_Q	T_J =+25 °C		-	5.2	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	-	0.5	mA
		V_I = 21V to 33V		-	-	1	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-1	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	110	-	µV/Vo
Ripple Rejection	RR	f = 120Hz V_I = 22V to 32V		53	69	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J=+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	22	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35V, T_A=+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J =+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-04714

Electrical Characteristics (MC7824)

(Refer to test circuit ,0°C < T_J < 125°C, I_O = 500mA, V_I =33V, C_I= 0.33µF, C_O=0.1µF, unless otherwise specified)

Parameter	Symbol	Conditions		MC7824			Unit
				Min.	Typ.	Max.	
Output Voltage	V_O	T_J =+25 °C		23	24	25	V
		5.0mA ≤ I_O ≤ 1.0A, P_O ≤ 15W V_I = 27V to 38V		22.8	24	25.25	
Line Regulation (Note1)	Regline	T_J =+25 °C	V_I = 27V to 38V	-	17	480	mV
			V_I = 30V to 36V	-	6	240	
Load Regulation (Note1)	Regload	T_J =+25 °C	I_O = 5mA to 1.5A	-	15	480	mV
			I_O = 250mA to 750mA	-	5.0	240	
Quiescent Current	I_Q	T_J =+25 °C		-	5.2	8.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1.0A		-	0.1	0.5	mA
		V_I = 27V to 38V		-	0.5	1	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-1.5	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz, T_A =+25 °C		-	60	-	µV/Vo
Ripple Rejection	RR	f = 120Hz V_I = 28V to 38V		50	67	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J=+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	28	-	mΩ
Short Circuit Current	I_{SC}	V_I = 35V, T_A=+25 °C		-	230	-	mA
Peak Current	I_{PK}	T_J =+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
GAP PPA-ITC-04715

Electrical Characteristics (MC7805A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I = 10V, C_I=0.33µF, C_O=0.1µF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25 °C		4.9	5	5.1	V
		I_O = 5mA to 1A, P_O ≤ 15W V_I = 7.5V to 20V		4.8	5	5.2	
Line Regulation (Note1)	Regline	V_I = 7.5V to 25V I_O = 500mA		-	5	50	mV
		V_I = 8V to 12V		-	3	50	
		T_J =+25 °C	V_I= 7.3V to 20V	-	5	50	
			V_I= 8V to 12V	-	1.5	25	
Load Regulation (Note1)	Regload	T_J =+25 °C I_O = 5mA to 1.5A		-	9	100	mV
		I_O = 5mA to 1A		-	9	100	
		I_O = 250mA to 750mA		-	4	50	
Quiescent Current	I_Q	T_J =+25 °C		-	5.0	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		-	-	0.5	mA
		V_I = 8 V to 25V, I_O = 500mA		-	-	0.8	
		V_I = 7.5V to 20V, T_J =+25 °C		-	-	0.8	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-0.8	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25 °C		-	10	-	µV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 8V to 18V		-	68	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	17	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J= +25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-IPA-ITC-04716

Electrical Characteristics (MC7806A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I =11V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25 °C		5.58	6	6.12	V
		I_O = 5mA to 1A, P_O ≤ 15W V_I = 8.6V to 21V		5.76	6	6.24	
Line Regulation (Note1)	Regline	V_I= 8.6V to 25V I_O = 500mA		-	5	60	mV
		V_I= 9V to 13V		-	3	60	
		T_J =+25 °C	V_I= 8.3V to 21V	-	5	60	
			V_I= 9V to 13V	-	1.5	30	
Load Regulation (Note1)	Regload	T_J =+25 °C I_O = 5mA to 1.5A		-	9	100	mV
		I_O = 5mA to 1A		-	4	100	
		I_O = 250mA to 750mA		-	5.0	50	
Quiescent Current	I_Q	T_J =+25 °C		-	4.3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		-	-	0.5	mA
		V_I = 9V to 25V, I_O = 500mA		-	-	0.8	
		V_I= 8.5V to 21V, T_J =+25 °C		-	-	0.8	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-0.8	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25 °C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 9V to 19V		-	65	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	17	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-IPA-ITC-04717

Electrical Characteristics (MC7808A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I = 14V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25 °C		7.84	8	8.16	V
		I_O = 5mA to 1A, P_O ≤15W V_I = 10.6V to 23V		7.7	8	8.3	
Line Regulation (Note1)	Regline	V_I= 10.6V to 25V I_O = 500mA		-	6	80	mV
		V_I= 11V to 17V		-	3	80	
		T_J =+25 °C	V_I= 10.4V to 23V	-	6	80	
			V_I= 11V to 17V	-	2	40	
Load Regulation (Note1)	Regload	T_J =+25 °C I_O = 5mA to 1.5A		-	12	100	mV
		I_O = 5mA to 1A		-	12	100	
		I_O = 250mA to 750mA		-	5	50	
Quiescent Current	I_Q	T_J =+25 °C		-	5.0	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		-	-	0.5	mA
		V_I = 11V to 25V, I_O = 500mA		-	-	0.8	
		V_I= 10.6V to 23V, T_J =+25 °C		-	-	0.8	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-0.8	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25 °C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 11.5V to 21.5V		-	62	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2	-	V
Output Resistance	r_O	f = 1KHz		-	18	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-04718

Electrical Characteristics (MC7809A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I = 15V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25°C		8.82	9.0	9.18	V
		I_O = 5mA to 1A, P_O≤15W V_I = 11.2V to 24V		8.65	9.0	9.35	
Line Regulation (Note1)	Regline	V_I= 11.7V to 25V I_O = 500mA		-	6	90	mV
		V_I= 12.5V to 19V		-	4	45	
		T_J =+25°C	V_I= 11.5V to 24V	-	6	90	
			V_I= 12.5V to 19V	-	2	45	
Load Regulation (Note1)	Regload	T_J =+25°C I_O = 5mA to 1.0A		-	12	100	mV
		I_O = 5mA to 1.0A		-	12	100	
		I_O = 250mA to 750mA		-	5	50	
Quiescent Current	I_Q	T_J =+25 °C		-	5.0	6.0	mA
Quiescent Current Change	ΔI_Q	V_I = 11.7V to 25V, T_J=+25 °C		-	-	0.8	mA
		V_I = 12V to 25V, I_O = 500mA		-	-	0.8	
		I_O = 5mA to 1.0A		-	-	0.5	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-1.0	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25 °C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 12V to 22V		-	62	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2.0	-	V
Output Resistance	r_O	f = 1KHz		-	17	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25°C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant, junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-04719

Electrical Characteristics (MC7810A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I = 16V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25°C		9.8	10	10.2	V
		I_O = 5mA to 1A, P_O ≤ 15W V_I =12.8V to 25V		9.6	10	10.4	
Line Regulation (Note1)	Regline	V_I= 12.8V to 26V I_O = 500mA		-	8	100	mV
		V_I= 13V to 20V		-	4	50	
		T_J =+25°C	V_I= 12.5V to 25V	-	8	100	
			V_I= 13V to 20V	-	3	50	
Load Regulation (Note1)	Regload	T_J =+25°C I_O = 5mA to 1.5A		-	12	100	mV
		I_O = 5mA to 1.0A		-	12	100	
		I_O = 250mA to 750mA		-	5	50	
Quiescent Current	I_Q	T_J =+25°C		-	5.0	6.0	mA
Quiescent Current Change	ΔI_Q	V_I = 13V to 26V, T_J=+25°C		-	-	0.5	mA
		V_I = 12.8V to 25V, I_O = 500mA		-	-	0.8	
		I_O = 5mA to 1.0A		-	-	0.5	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-1.0	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25°C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 14V to 24V		-	62	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25°C		-	2.0	-	V
Output Resistance	r_O	f = 1KHz		-	17	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25°C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25°C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-04720

Electrical Characteristics (MC7812A)

(Refer to the test circuits, $0°C < T_J < 125°C$, I_O =1A, V_I = 19V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25 °C		11.75	12	12.25	V
		I_O = 5mA to 1A, P_O ≤15W V_I = 14.8V to 27V		11.5	12	12.5	
Line Regulation (Note1)	Regline	V_I= 14.8V to 30V I_O = 500mA		-	10	120	mV
		V_I= 16V to 22V		-	4	120	
		T_J =+25 °C	V_I= 14.5V to 27V	-	10	120	
			V_I= 16V to 22V	-	3	60	
Load Regulation (Note1)	Regload	T_J =+25 °C I_O = 5mA to 1.5A		-	12	100	mV
		I_O = 5mA to 1.0A		-	12	100	
		I_O = 250mA to 750mA		-	5	50	
Quiescent Current	I_Q	T_J =+25°C		-	5.1	6.0	mA
Quiescent Current Change	ΔI_Q	V_I = 15V to 30V, T_J=+25 °C		-		0.8	mA
		V_I = 14V to 27V, I_O = 500mA		-		0.8	
		I_O = 5mA to 1.0A		-		0.5	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-1.0	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25°C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 14V to 24V		-	60	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25°C		-	2.0	-	V
Output Resistance	r_O	f = 1KHz		-	18	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

ADC EX1002
IPR2025-00885
CAR-PPA-ITC-04721

Electrical Characteristics (MC7815A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I =23V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25 °C		14.7	15	15.3	V
		I_O = 5mA to 1A, P_O ≤15W V_I = 17.7V to 30V		14.4	15	15.6	
Line Regulation (Note1)	Regline	V_I= 17.9V to 30V I_O = 500mA		-	10	150	mV
		V_I= 20V to 26V		-	5	150	
		T_J =+25°C	V_I= 17.5V to 30V	-	11	150	
			V_I= 20V to 26V	-	3	75	
Load Regulation (Note1)	Regload	T_J =+25 °C I_O = 5mA to 1.5A		-	12	100	mV
		I_O = 5mA to 1.0A		-	12	100	
		I_O = 250mA to 750mA		-	5	50	
Quiescent Current	I_Q	T_J =+25 °C		-	5.2	6.0	mA
Quiescent Current Change	ΔI_Q	V_I = 17.5V to 30V, T_J =+25 °C		-	-	0.8	mA
		V_I = 17.5V to 30V, I_O = 500mA		-	-	0.8	
		I_O = 5mA to 1.0A		-	-	0.5	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-1.0	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25 °C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 18.5V to 28.5V		-	58	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2.0	-	V
Output Resistance	r_O	f = 1KHz		-	19	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25°C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

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Electrical Characteristics (MC7818A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I = 27V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25 °C		17.64	18	18.36	V
		I_O = 5mA to 1A, P_O ≤15W V_I = 21V to 33V		17.3	18	18.7	
Line Regulation (Note1)	Regline	V_I= 21V to 33V I_O = 500mA		-	15	180	mV
		V_I= 21V to 33V		-	5	180	
		T_J =+25 °C	V_I= 20.6V to 33V	-	15	180	
			V_I= 24V to 30V	-	5	90	
Load Regulation (Note1)	Regload	T_J =+25°C I_O = 5mA to 1.5A		-	15	100	mV
		I_O = 5mA to 1.0A		-	15	100	
		I_O = 250mA to 750mA		-	7	50	
Quiescent Current	I_Q	T_J =+25 °C		-	5.2	6.0	mA
Quiescent Current Change	ΔI_Q	V_I = 21V to 33V, T_J=+25 °C		-	-	0.8	mA
		V_I = 21V to 33V, I_O = 500mA		-	-	0.8	
		I_O = 5mA to 1.0A		-	-	0.5	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-1.0	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25°C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 22V to 32V		-	57	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25°C		-	2.0	-	V
Output Resistance	r_O	f = 1KHz		-	19	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25°C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

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GAP PPA-ITC-04723

Electrical Characteristics (MC7824A)

(Refer to the test circuits. 0°C < T_J < 125°C, I_O =1A, V_I = 33V, C_I=0.33μF, C_O=0.1μF, unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J =+25 °C		23.5	24	24.5	V
		I_O = 5mA to 1A, P_O ≤15W V_I = 27.3V to 38V		23	24	25	
Line Regulation (Note1)	Regline	V_I= 27V to 38V I_O = 500mA		-	18	240	mV
		V_I= 21V to 33V		-	6	240	
		T_J =+25 °C	V_I= 26.7V to 38V	-	18	240	
			V_I= 30V to 36V	-	6	120	
Load Regulation (Note1)	Regload	T_J =+25 °C I_O = 5mA to 1.5A		-	15	100	mV
		I_O = 5mA to 1.0A		-	15	100	
		I_O = 250mA to 750mA		-	7	50	
Quiescent Current	I_Q	T_J =+25 °C		-	5.2	6.0	mA
Quiescent Current Change	ΔI_Q	V_I = 27.3V to 38V, T_J =+25 °C		-	-	0.8	mA
		V_I = 27.3V to 38V, I_O = 500mA		-	-	0.8	
		I_O = 5mA to 1.0A		-	-	0.5	
Output Voltage Drift	$\Delta V/\Delta T$	I_O = 5mA		-	-1.5	-	mV/ °C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A = 25 °C		-	10	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, I_O = 500mA V_I = 28V to 38V		-	54	-	dB
Dropout Voltage	V_{Drop}	I_O = 1A, T_J =+25 °C		-	2.0	-	V
Output Resistance	r_O	f = 1KHz		-	20	-	mΩ
Short Circuit Current	I_{SC}	V_I= 35V, T_A =+25 °C		-	250	-	mA
Peak Current	I_{PK}	T_J=+25 °C		-	2.2	-	A

Note:

1. Load and line regulation are specified at constant junction temperature. Change in VO due to heating effects must be taken into account separately. Pulse testing with low duty is used.

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Typical Perfomance Characteristics

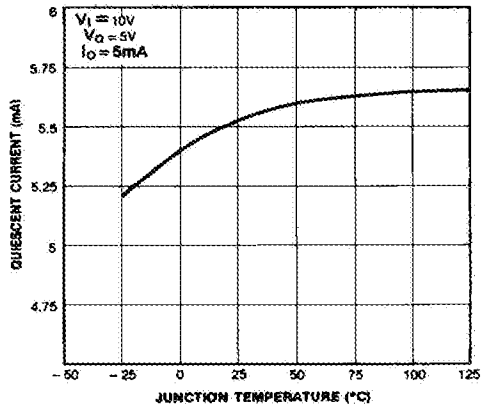


Figure 1. Quiescent Current

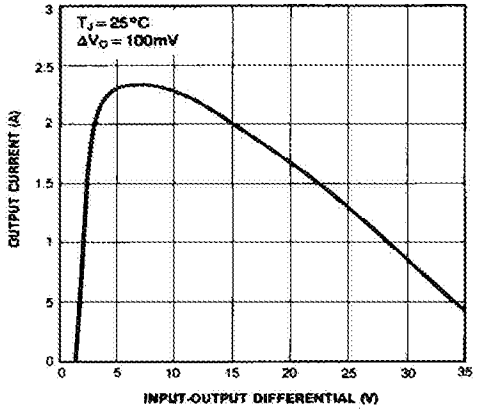


Figure 2. Peak Output Current

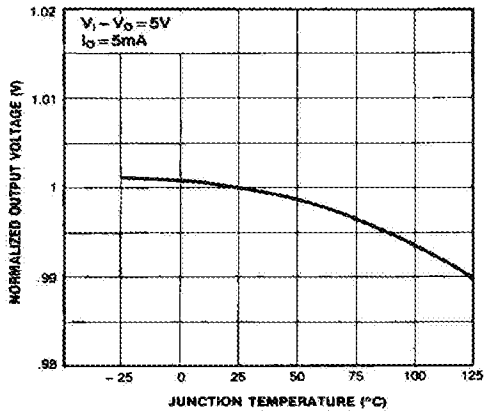


Figure 3. Output Voltage

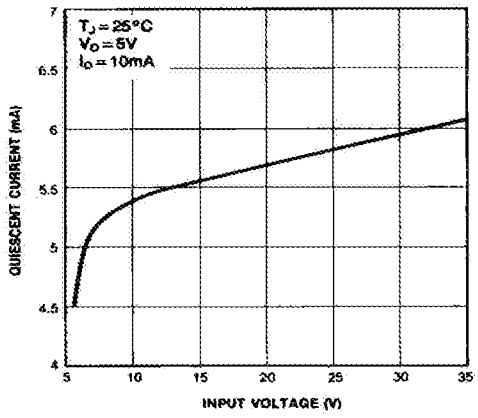


Figure 4. Quiescent Current

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Typical Applications

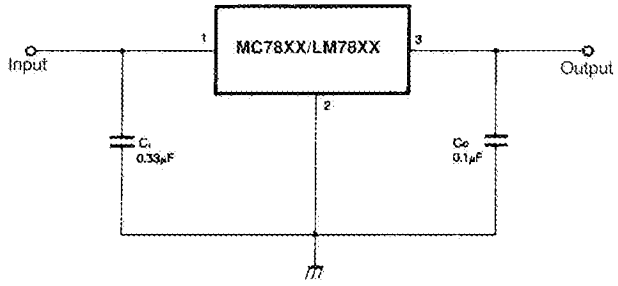


Figure 5. DC Parameters

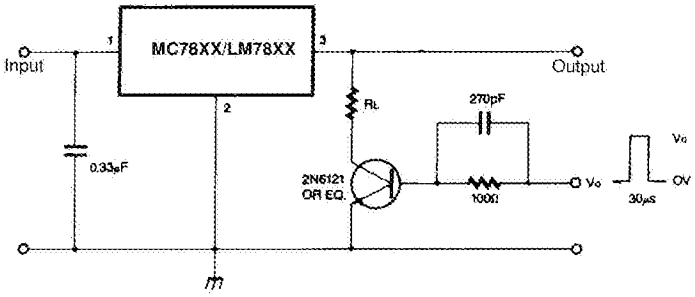


Figure 6. Load Regulation

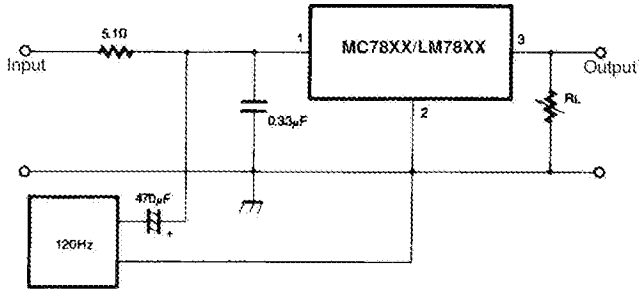


Figure 7. Ripple Rejection

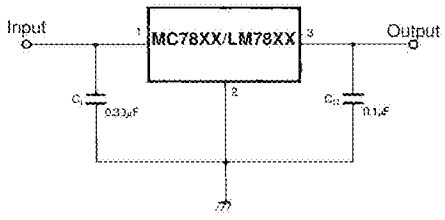


Figure 8. Fixed Output Regulator

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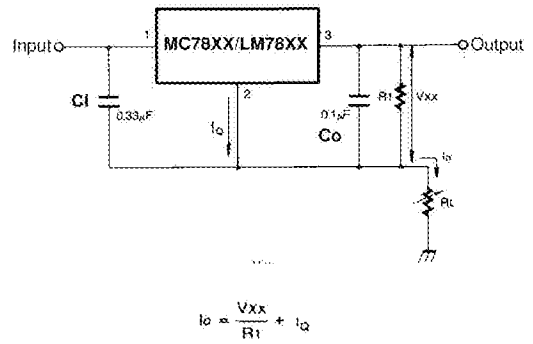


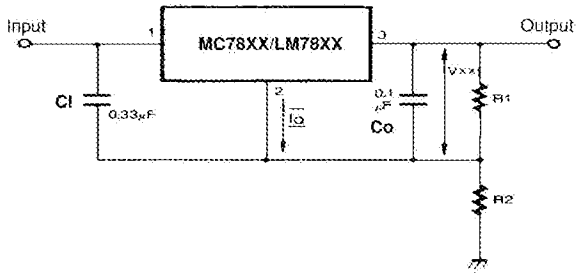
Figure 9. Constant Current Regulator

Notes:

(1) To specify an output voltage, substitute voltage value for "XX." A common ground is required between the input and the Output voltage. The input voltage must remain typically 2.0V above the output voltage even during the low point on the input ripple voltage.

(2) C_I is required if regulator is located an appreciable distance from power Supply filter.

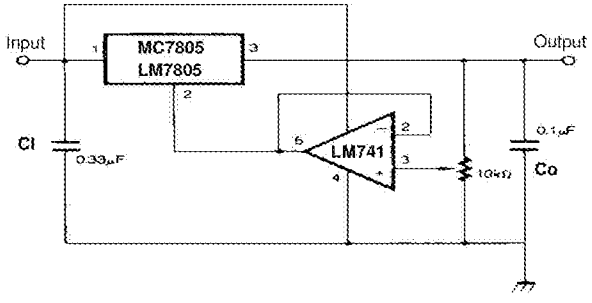
(3) C_O improves stability and transient response.



$$I_{R1} \geq 5IQ$$

$$V_O = V_{XX}(1+R_2/R_1)+I_QR_2$$

Figure 10. Circuit for Increasing Output Voltage



$$I_{R1} \geq 5\ I_Q$$

$$V_O = V_{XX}(1+R_2/R_1)+I_QR_2$$

Figure 11. Adjustable Output Regulator (7 to 30V)

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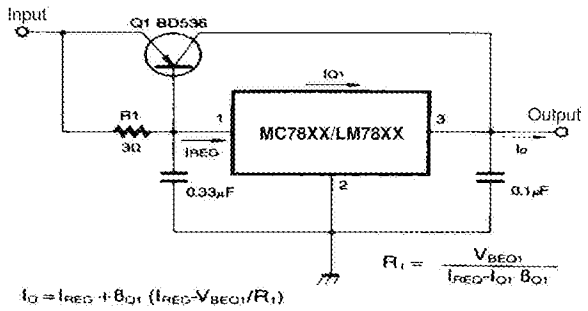


Figure 12. High Current Voltage Regulator

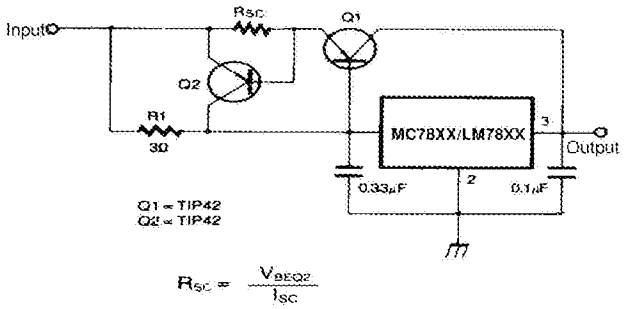


Figure 13. High Output Current with Short Circuit Protection

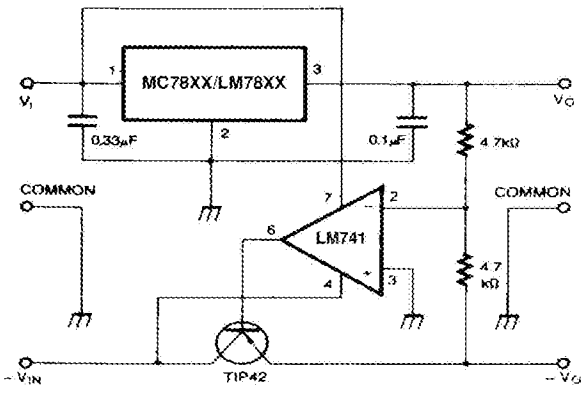


Figure 14. Tracking Voltage Regulator

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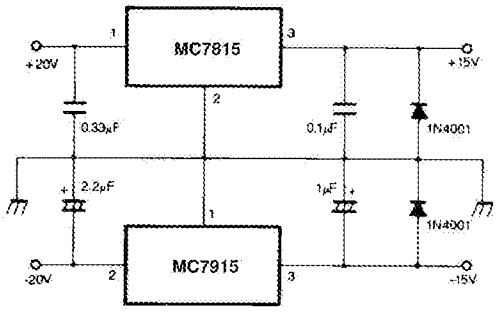


Figure 15. Split Power Supply (±15V-1A)

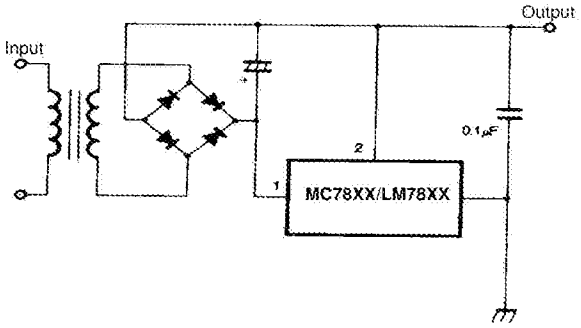


Figure 16. Negative Output Voltage Circuit

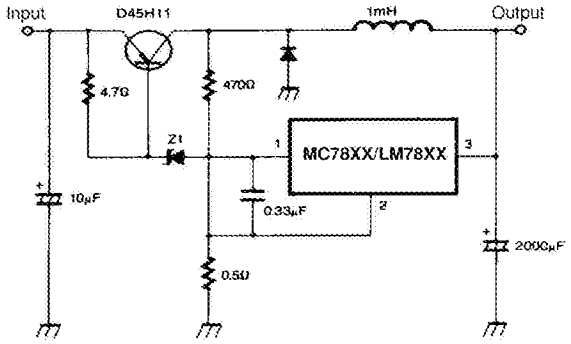


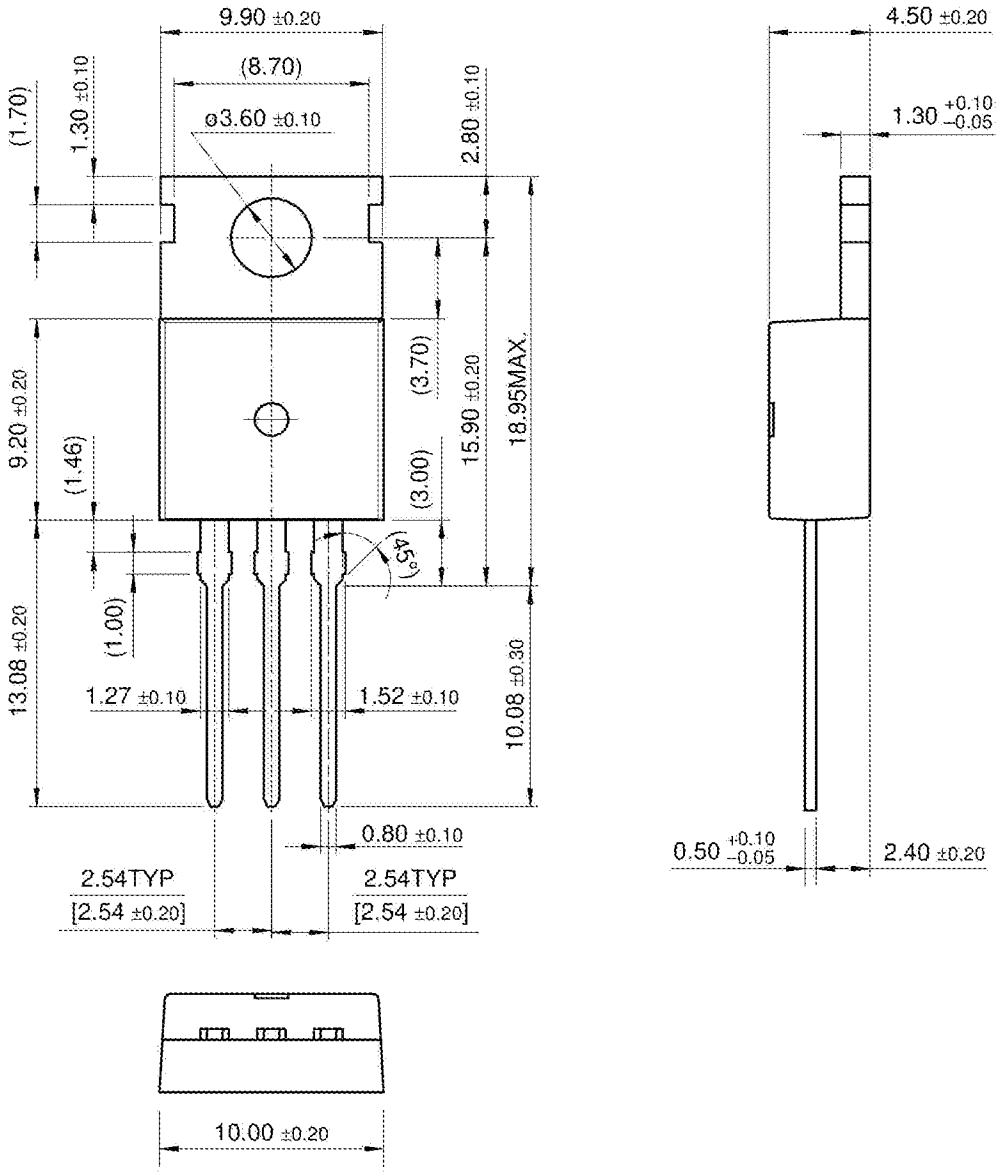
Figure 17. Switching Regulator

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Mechanical Dimensions

Package

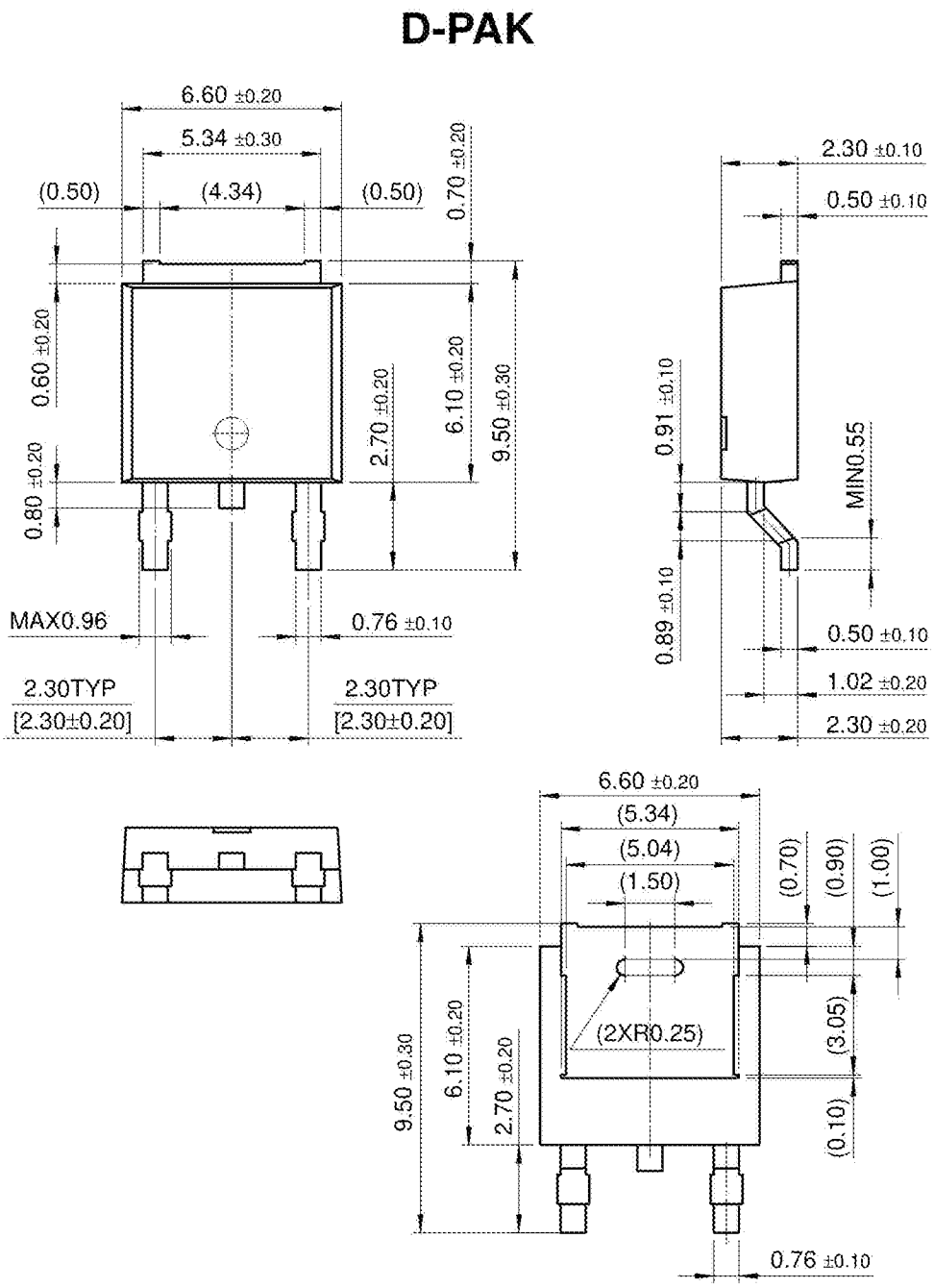
TO-220



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Mechancal Dimensions (Continued)

Package



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Ordering Information

Product Number	Output Voltage Tolerance	Package	Operating Temperature
LM7805CT	±4%	TO-220	0 ~ + 125°C

Product Number	Output Voltage Tolerance	Package	Operating Temperature
MC7805CT	±4%	TO-220	0 ~ + 125°C
MC7806CT			
MC7808CT			
MC7809CT			
MC7810CT			
MC7812CT			
MC7815CT			
MC7818CT			
MC7824CT			
MC7805CDT		D-PAK	
MC7806CDT			
MC7808CDT			
MC7809CDT			
MC7810CDT			
MC7812CDT			
MC7805ACT	±2%	TO-220	
MC7806ACT			
MC7808ACT			
MC7809ACT			
MC7810ACT			
MC7812ACT			
MC7815ACT			
MC7818ACT			
MC7824ACT			

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Espacenet

CN104488111A Device for connecting battery module electrode terminal and terminal

Applicants: SK INNOVATION CO LTD

Inventors: KIM KENNETH,LEE YUNN YOUNG

Classifications:

IPC ***H01M2/26; H01M2/30;***

CPC **H01M50/502 (EP,US); H01M50/543 (EP,CN,US); H01R11/281 (EP,US); H01R13/187 (EP,US); H01R24/38 (US);** H01R13/20 (EP,US); H01R13/501 (EP,US); Y02E60/10 (EP);

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Device for connecting battery module electrode terminal and terminal

Abstract

The present invention relates to a device for connecting a battery module electrode terminal and a terminal, which can electrically connect a battery module electrode terminal and a terminal by being press-fit over the exterior of the electrode terminal which is formed to project outside the battery module. The present invention is configured to have: a socket terminal inserted over the exterior of the electrode terminal in close contact therewith; and a socket coupled to the exterior thereof in close contact therewith, and coupled to the terminal, such that the electrode terminal and the terminal can be electrically connected with each other by means of the socket terminal and the socket.

(19)中华人民共和国国家知识产权局

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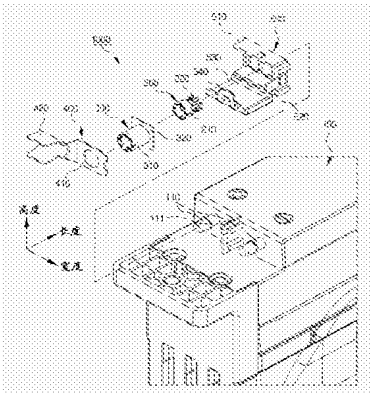
权利要求书1页 说明书6页 附图6页

(54)发明名称

电池模块的电极端子及接线端连接装置

(57)摘要

本发明涉及能够压入于向电池模块的外侧突出形成的电极端子的外侧并将电极端子与接线端电连接的电池模块的电极端子及接线端连接装置，更具体地涉及由插入于电极端子的外侧并紧贴的插座端子以及与上述插座端子的外侧相结合并紧贴且与接线端相结合的插座构成，使电极端子和接线端能够利用插座端子和插座电连接的电池模块的电极端子及接线端连接装置。



CN 104488111 A

1. 一种电池模块的电极端子及接线端连接装置，其特征在于，

包括：

插座端子，在圆筒形的主体的一侧沿着圆周方向以拉开一定距离的方式延伸形成有多个弹性接触件，该插座端子插入于向电池模块的一侧突出形成的电极端子的外侧并紧贴，以及

插座，以包围上述插座端子的外侧并紧贴的方式结合，在该插座的一侧结合接线端；

上述电极端子和接线端利用上述插座端子及插座而被电连接。

2. 根据权利要求 1 所述的电池模块的电极端子及接线端连接装置，其特征在于，

上述插座端子形成有由弹性接触件的长度方向的一部分朝向中心弯曲而成的弯曲部，上述弹性接触件的弯曲部与上述电极端子的外周面紧贴。

3. 根据权利要求 2 所述的电池模块的电极端子及接线端连接装置，其特征在于，

上述电极端子在外周面形成有突出端，使上述插座端子插入于电极端子而使上述弹性接触件的弯曲部被上述突出端卡止而结合。

4. 根据权利要求 1 所述的电池模块的电极端子及接线端连接装置，其特征在于，

上述插座在内周面形成有突出形成的卡止突起，上述插座端子在主体形成有多个结合孔，上述卡止突起插入于结合孔而被固定。

5. 根据权利要求 1 所述的电池模块的电极端子及接线端连接装置，其特征在于，

上述插座在与插入于电极端子的方向相反的一侧的内周面形成有台阶部，上述台阶部的内径小于上述插座端子的主体的外径。

6. 根据权利要求 5 所述的电池模块的电极端子及接线端连接装置，其特征在于，

在上述插座端子的主体的一侧形成有供上述台阶部插入并放置的防旋转槽。

7. 根据权利要求 1 所述的电池模块的电极端子及接线端连接装置，其特征在于，

上述插座在以包围插座端子的外侧并紧贴的方式形成的圆筒形的躯体的一侧形成有垂直板，上述接线端与上述垂直板紧贴结合。

8. 根据权利要求 1 所述的电池模块的电极端子及接线端连接装置，其特征在于，

还包括壳体，该壳体与上述电池模块结合，收容与上述电极端子结合的插座、插座端子及接线端，并使上述插座及插座端子向插入于电极端子的方向紧贴。

9. 根据权利要求 8 所述的电池模块的电极端子及接线端连接装置，其特征在于，

在形成于上述电池模块的隔板形成有滑动引导件及台肩，在上述壳体形成有与上述滑动引导件对应的滑动槽以及被台肩卡定的弹性钩。

10. 根据权利要求 9 所述的电池模块的电极端子及接线端连接装置，其特征在于，

对于上述弹性钩而言，弹性板的一侧固定于壳体，弹性板的另一侧向与壳体结合于电池模块的方向相反的方向延伸而以长于壳体及隔板的方式形成，在上述弹性板形成有突出部而被上述隔板的台肩卡定。

11. 根据权利要求 8 所述的电池模块的电极端子及接线端连接装置，其特征在于，

上述壳体在内侧突出形成有固定突起，上述接线端形成有与固定突起对应的切开部，利用上述固定突起来使上述接线端紧贴固定。

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电池模块的电极端子及接线端连接装置

技术领域

[0001] 本发明涉及可连接电池模块的电极端子和与外部设备的电源用电缆相结合的接线端（terminal）的电池模块的电极端子及接线端连接装置。

背景技术

[0002] 通常二次电池与一次电池不同，能够进行充电及放电，从而适用于数码相机、手机、笔记本电脑、混合动力车之类的各种领域，且进行着活跃的研究。作为二次电池，可例举镍－镉电池、镍金属氢化物电池、镍氢电池及锂二次电池。并且，在二次电池中对具有高能量密度和放电电压的锂二次电池的研究正进行着各种研究，且商用化而被广泛使用。

[0003] 并且，二次电池由于高功率大容量的必要性而呈层叠多个电池单元的电池模块的形态，且在电池模块以向外侧突出的方式形成有电极端子，从而可与外部设备的电源电缆相连接。

[0004] 此时，在电池模块的电极端子的外周面形成有螺纹，且外部设备的电源电缆与接线端结合，从而将接线端插入于电极端子的外侧之后利用螺母固定的方式进行连接。

[0005] 但是，就这种结构及方式而言，当电池模块设置于特定空间，或者层叠多个电池模块而构成电池组时，需要插入可拧紧螺母的工具，因而存在需要确保充分的空间的缺点。并且，要想拧紧螺母，就需要施加特定的扭矩，且因发生故障而检查时难以分解及组装。

[0006] 作为与此相关的现有技术，公开有作为欧洲公开专利（0896389）的“得到改良的电池接线端（Improved battery terminal）”。

[0007] 现有技术文献

[0008] 专利文献

[0009] EP 0896389 A1(1999 年 02 月 10 日）

发明内容

[0010] 本发明用于解决如上所述的问题而提出，本发明的目的在于，提供能够以压入方式简单连接向电池模块的外侧突出的电极端子和与外部设备的电源电缆相结合的接线端的电池模块的电极端子及接线端连接装置。

[0011] 用于达成如上所述的目的的本发明的电池模块的电极端子及接线端连接装置包括：插座端子，在圆筒形的主体的一侧沿着圆周方向以拉开一定距离的方式延伸形成有多个弹性接触件，该插座端子插入于向电池模块的一侧突出形成的电极端子的外侧并紧贴，以及插座，以包围上述插座端子的外侧并紧贴的方式结合，在该插座的一侧结合接线端；上述电极端子和接线端利用上述插座端子及插座而被电连接。

[0012] 并且，上述插座端子形成有由弹性接触件的长度方向的一部分朝向中心弯曲而成的弯曲部，上述弹性接触件的弯曲部与上述电极端子的外周面紧贴。

[0013] 并且，上述电极端子在外周面形成有突出端，使上述插座端子插入于电极端子而使上述弹性接触件的弯曲部被上述突出端卡止而结合。

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[0014] 并且，上述插座在内周面形成有突出形成的卡止突起，上述插座端子在主体形成有多个结合孔，上述卡止突起插入于结合孔而被固定。

[0015] 并且，上述插座在与插入于电极端子的方向相反的一侧的内周面形成有台阶部，上述台阶部的内径小于上述插座端子的主体的外径。

[0016] 并且，在上述插座端子的主体的一侧形成有供上述台阶部插入并放置的防旋转槽。

[0017] 并且，上述插座在以包围插座端子的外侧并紧贴的方式形成的圆筒形的躯体的一侧形成有垂直板，上述接线端与上述垂直板紧贴结合。

[0018] 并且，本发明还包括壳体，该壳体与上述电池模块结合，收容与上述电极端子结合的插座、插座端子及接线端，并使上述插座及插座端子向插入于电极端子的方向紧贴。

[0019] 并且，在形成于上述电池模块的隔板形成有滑动引导件及台肩，在上述壳体形成有与上述滑动引导件对应的滑动槽以及被台肩卡定的弹性钩。

[0020] 并且，对于上述弹性钩而言，弹性板的一侧固定于壳体，弹性板的另一侧向与壳体结合于电池模块的方向相反的方向延伸而以长于壳体及隔板的方式形成，在上述弹性板形成有突出部而被上述隔板的台肩卡定。

[0021] 并且，上述壳体在内侧突出形成有固定突起，上述接线端形成有与固定突起对应的切开部，利用上述固定突起来使上述接线端紧贴固定。

[0022] 本发明的电池模块的电极端子及接线端连接装置，能够以压入方式连接电池模块的电极端子和与电源电缆相结合的接线端，从而具有当将电极端子与接线端电连接时不需要额外的工具，且便于连接的优点。

[0023] 并且，具有能够缩短用于连接电极端子和接线端的作业工序及所需时间，且因便于分解及组装而容易维护维修的优点。

[0024] 并且，具有能够解决在借助螺母紧固的方式中有可能发生的由紧固扭矩不足引起的螺母松动及接触不良等质量问题的优点。

附图说明

[0025] 图 1 及图 2 为表示本发明一实施例的电池模块的电极端子及接线端连接装置的分解立体图及组装立体图。

[0026] 图 3 为图 2 的 AA’方向剖视图。

[0027] 图 4 为表示由本发明的多个电池模块构成的电池组的立体图。

[0028] 图 5 及图 6 为表示本发明的插座和插座端子的结合结构的分解立体图及组装立体图。

[0029] 图 7 及图 8 为表示本发明的电池模块和壳体的结合结构的分解立体图及组装立体图。

[0030] 图 9 为表示本发明的壳体和接线端的固定结构的立体图。

[0031] 附图标记的说明

[0032] 1000 ： 电池模块的电极端子及接线端连接装置

[0033] 100 ： 电池模块 110 ： 电极端子

[0034] 111 ： 突出端 120 ： 隔板

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[0035] 121：滑动引导件 122：台肩
[0036] 200：插座端子 210：主体
[0037] 211：结合孔 212：防旋转槽
[0038] 220：弹性接触件 221：弯曲部
[0039] 300：插座 310：躯体
[0040] 311：卡止突起 312：台阶部
[0041] 320：垂直板 400：接线端
[0042] 410：中空板 411：切开部
[0043] 420：电缆结合部 500：壳体
[0044] 510：壳体躯体 511：滑动槽
[0045] 512：固定突起 520：弹性钩
[0046] 521：弹性板 522：突出部
[0047] 530：盖 540：固定钩
[0048] 2000：电池组

具体实施方式

[0049] 以下，参照附图，详细说明如上所述的本发明一实施例的电池模块的电极端子及接线端连接装置。

[0050] 图 1 及图 2 为表示本发明一实施例的电池模块的电极端子及接线端连接装置的分解立体图及组装立体图。

[0051] 如图所示，本发明一实施例的电池模块的电极端子及接线端连接装置 1000 包括：插座端子 200，在圆筒形的主体 210 的一侧沿着圆周方向以拉开一定距离的方式延伸形成有多个弹性接触件 220，上述插座端子 200 插入于向电池模块 100 的一侧突出形成的电极端子 110 的外侧并紧贴；以及插座 300，以包围上述插座端子 200 的外侧并紧贴的方式结合，上述插座 300 的一侧与接线端 400 相结合；上述电极端子 110 和接线端 400 利用上述插座端子 200 及插座 300 而被电连接。

[0052] 首先，对于电池模块 100 而言，多个电池单元被层叠并被电连接，且在一侧突出形成有电极端子 110。此时，如图 1 所示，电极端子 110 可由阳极端子及阴极端子以拉开一定距离的方式并排形成，可形成于电池模块 100 的长度方向侧面或上面等各种位置。

[0053] 在插座端子 200 的圆筒形的主体 210 的一侧形成有多个弹性接触件 220，弹性接触件 220 沿着主体 210 的圆周方向以拉开一定距离的方式形成。此时，圆筒形的主体 210 的内径可大于电极端子 110 的外径，以使插座端子 200 容易插入于电极端子 110 的外侧。并且，弹性接触件 220 呈向圆筒形主体 210 的中心轴方向弯折或弯曲的形态，以使由多个弹性接触件 220 所形成的内径小于电极端子 110 的外径。因此，当插座端子 200 插入于电极端子 110 的外侧并结合时，插座端子 200 的弹性接触件 220 与电极端子 110 相紧贴。

[0054] 插座 300 以插入于插座端子 200 的外侧并紧贴的方式结合，并能够以包围插座端子 200 的外侧的方式呈圆筒形。并且，插座 300 的一侧与接线端 400 相结合，且接线端 400 能够以焊接方式固定于插座 300 并电连接。

[0055] 此时，对于接线端 400 而言，可在内侧呈中空的中空板 410 的一侧形成有电缆结合

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部 420，使中空板 410 插入于插座 300 的外侧并结合，在电缆结合部 420 结合有与外部设备连接的电源电缆。

[0056] 像这样，在将插座端子 200 插入于插座 300 的内侧并结合的状态下，可将插座 300 和插座端子 200 的组装体插入于电极端子 110 的外侧并紧贴结合，将接线端 400 插入于插座 300 的外侧并焊接，由此将电池模块 100 的电极端子 110 与接线端 400 电连接。

[0057] 因此，本发明一实施例的电池模块的电极端子及接线端连接装置，能够利用插入于插座的内侧并结合的插座端子的弹性接触件来以压入方式连接电池模块的电极端子和接线端，从而具有将电极端子与接线端电连接时不需要额外的工具，且便于连接的优点。并且，具有能够缩短用于连接电极端子和接线端的工作工程及所需时间，且因便于分解及组装而容易维护维修的优点。并且，具有能够解决在借助螺母紧固的方式中有可能发生的由紧固扭矩不足引起的螺母松动及接触不良等质量问题的优点。

[0058] 并且，可如图 4 所示层叠多个电池模块 100，并利用汇流条等连接相邻的电池模块 100 之间的阳极端子和阴极端子，来形成电池组 2000 之后，利用本发明的连接装置 1000 连接配置于最外围的电池模块 100 的阳极端子及阴极端子和外部设备的电源用电缆。

[0059] 并且，在上述插座端子 200 可形成有弹性接触件 220 的长度方向的一部分朝向中心弯曲而成的弯曲部 221，上述弹性接触件 220 的弯曲部 221 可与上述电极端子 110 的外周面相紧贴。

[0060] 即，如图 3 所示，插座端子 200 的主体 210 与弹性接触件 220 的一侧相结合，且延伸形成的长度方向的一部分向圆筒形的主体 210 的中心轴方向弯曲而形成弯曲部 221，与和主体 210 结合的一侧相反的一侧即弹性接触件 220 的另一侧（自由端），以向主体 210 的中心轴外侧方向弯曲的方式形成。此时，由多个弹性接触件 220 的弯曲部 221 所形成的内径小于电极端子 110 的外径，从而通过压入能够使弹性接触件 220 的弯曲部 221 与电极端子 110 的外周面紧贴结合。

[0061] 因此，若将插座端子 200 插入于插座 300 的内侧并结合的状态下，压入于电极端子 110 的外侧，则插座端子 200 的主体 210 及弹性接触件 220 的另一侧（自由端）可与插座 300 的内周面相紧贴，且弯曲部 221 与电极端子 110 的外周面相紧贴，因而能够将电连接稳定化。

[0062] 此时，在上述电极端子 110 的外周面可形成有突出端 111，从而使上述插座端子 200 插入于电极端子 110 而使上述弹性接触件 220 的弯曲部 221 被上述突出端 111 卡止而结合。

[0063] 即，当与插座 300 的内侧相结合的插座端子 200 插入于电极端子 110 的外侧时，弹性接触件 220 的弯曲部 221 随着越过电极端子 110 的突出端 111 而展开，之后借助弹性重新恢复原状。因此，在结合之后，插座端子 200 的弹性接触件 220 的弯曲部 221 被形成于电极端子 110 的外周面的突出端 111 卡止，从而使插座端子 200 不易向被插入的相反方向脱离。

[0064] 并且，电极端子 110 一般可呈圆柱形或方形，在上述电极端子 110 的外周面也可形成有螺纹，但为了使通电电流顺畅地流动，优选地，以电极端子 110 和插座端子 200 的弹性接触件 220 的接触面积可增加的方式光滑地形成。并且，为了防止通电及脱离，也能够以与插座端子 200 的弹性接触件 220 的弯曲部 221 的形状相对应的方式使电极端子 110 的外周

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面呈凹陷形态，从而使弯曲部 221 被放置于电极端子 110 的凹陷部分而紧贴结合。

[0065] 并且，在上述插座 300 的内周面形成有突出形成的卡止突起 311，在上述插座端子 200 的主体 210 形成有多个结合孔 211，上述卡止突起 311 可插入于结合孔 211 并被固定。即，利用插入于结合孔 211 的卡止突起 311，来结合插座 300 和插座端子 200，防止在插入的长度方向的移动，因而插座端子 200 的弹性接触件 220 可与电极端子 110 的外周面可靠地紧贴。

[0066] 并且，上述插座 300 在与插入于电极端子 110 的方向相反的一侧的内周面，可形成有台阶部 312，上述台阶部 312 的内径小于上述插座端子 200 的主体 210 的外径。由此，在插座端子 200 插入于插座 300 的内侧并结合的状态下，在插座 300 的与插入于电极端子 110 的方向相反的一侧形成有台阶部 312，以防止插座端子 200 被推出，而使插座端子 200 压入于电极端子 110 的外侧。此时，如图 5 及图 6 所示，台阶部 312 可在插座 300 的躯体 310 的一侧向中心轴方向突出的多个的形态，也可呈中空的圆板形态。

[0067] 并且，在上述插座端子 200 的主体 210 的一侧形成有用于插入并放置上述台阶部 312 的防旋转槽 212。即，在插座端子 200 与插座 300 相结合的状态下，台阶部 312 放置于防旋转槽 212 而防止沿着圆周方向的旋转，因而能够防止插座 300 与插座端子 200 之间的脱离。

[0068] 并且，在上述插座 300 的以包围插座端子 200 的外侧并紧贴的方式形成的圆筒形的躯体 310 的一侧可形成有垂直板 320，上述接线端 400 可与上述垂直板 320 紧贴结合。即，若在插座 300 的圆筒形的躯体 310 的一侧形成有垂直板 320，则可在将垂直板 320 与接线端 400 相紧贴之后进行焊接，因而能够容易进行结合及电连接。

[0069] 并且，本发明还可包括与上述电池模块 100 结合的壳体 500，上述壳体 500 用于收容与上述电极端子 110 相结合的插座 300、插座端子 200 及接线端 400，并使上述插座 300 及插座端子 200 向插入于电极端子 110 的方向紧贴。即，如图 2 所示，壳体 500 固定于电池模块 100，并保护电极端子 110、插座端子 200、插座 300 及接线端 400，如图 3 所示，壳体 500 的盖 530 使插座端子 200 及插座 300 向插入于电极端子 110 的方向紧贴，从而能够防止脱离。此时，在上述壳体 500 的以两侧开放的方式形成的壳体躯体 510 的开放的一侧，可形成有借助铰链来结合的盖 530，且在盖 530 可利用铰链来结合固定钩 540，从而关闭盖 530 并使固定钩 540 卡在形成于壳体躯体 510 的固定突起而固定。

[0070] 并且，在形成于上述电池模块 100 的隔板 120 可形成有滑动引导件 121 及台肩 122，且在上述壳体 500 可形成有与上述滑动引导件 121 相对应的滑动槽 511 以及被台肩 122 卡定的弹性钩 520。根据这种结构，如图 7 及图 8 所示，滑动引导件 121 沿着形成于壳体躯体 510 的侧面的滑动槽 511 插入，且在壳体躯体 510 的一侧与电池模块 100 相紧贴的状态下，利用弹性钩 520 及台肩 122 来进行固定，从而防止向后侧脱离。此时，电池模块 100 的隔板 120 可形成于以拉开一定距离的方式形成的一对电极端子 110 之间，且形成于隔板 120 的一侧的滑动引导件 121 以在上侧和下侧对称的方式形成一对，从而能够防止壳体躯体 510 脱离。并且，在隔板 120 的一对滑动引导件 121 之间可形成有台肩 122，用于使弹性钩 520 卡止。

[0071] 并且，在上述弹性钩 520 中，弹性板 521 的一侧可固定于壳体，弹性板 521 的另一侧沿着壳体 500 结合于电池模块 100 的方向相反的方向延伸形成，而以长于壳体 500 及隔

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板 120 的方式形成，在上述弹性板 521 可形成有突出部 522，以被上述隔板 120 的台肩 122 卡定。这用于容易分解壳体 500，弹性板 521 的一侧与壳体躯体 510 的侧面相结合，并与接近于电池模块 100 的一侧相结合，弹性板 521 的另一侧沿着其相反侧长长地延伸形成，并在长度方向以长于壳体 500 的方式形成，且在弹性板 521 形成有突出部 522。因此，当将壳体 500 与电池模块 100 相结合时，若壳体 500 沿着滑动引导件 121 被插入，则弹性板 521 一边被按压一边被插入，且在壳体 500 与电池模块 100 相紧贴的状态下，突出部 522 被台肩 122 卡止。相反，当从电池模块 100 分离壳体 500 时，若向壳体一侧拉动弹性板 521 的突出的另一端，则固定解除，从而可沿着滑动引导件分解壳体。

[0072] 并且，在壳体 500 形成有由与壳体躯体 510 结合于电池模块 100 的隔板 120 的一侧在宽度方向上相反的一侧侧面的一部分开放而形成的接线端引出部，以使接线端 400 结合成电缆结合部 420 向壳体 500 的外部突出，从而可连接于与外部设备相连接的电源用电缆。

[0073] 并且，在上述壳体 500 的内侧可突出形成有固定突起 512，在上述接线端 400 可形成有与固定突起 512 相对应的切开部 411，可利用上述固定突起 512 来使上述接线端 400 紧贴固定。参照图 9，当在壳体 500 与电池模块 100 相结合的状态下，结合插座端子 200、插座 300 及接线端 400，并插入于电极端子 110 的外侧时，接线端 400 的切开部 411 沿着固定突起 512 滑动并被压入，在被压入之后，利用固定突起 512 来使接线端 400 向电池模块 100 一侧紧贴。因此，能够利用形成于壳体 500 的内侧的固定突起 512，来防止接线端 400、插座 300 及插座端子 200 向与插入于电极端子 110 的方向相反的方向脱离。

[0074] 此时，固定突起 512 能够以“ㄱ”字形形成于壳体 500 的内侧侧壁，且弯折的部分的外侧倾斜或者呈圆弧形，当压入时能够使接线端 400 的切开部 411 容易滑动。

[0075] 本发明并不局限于如上所述的实施例，且适用范围多样，在不脱离权利要求中所请求的本发明的要旨的情况下，能够由本发明所属技术领域的普通技术人员进行各种变形实施。

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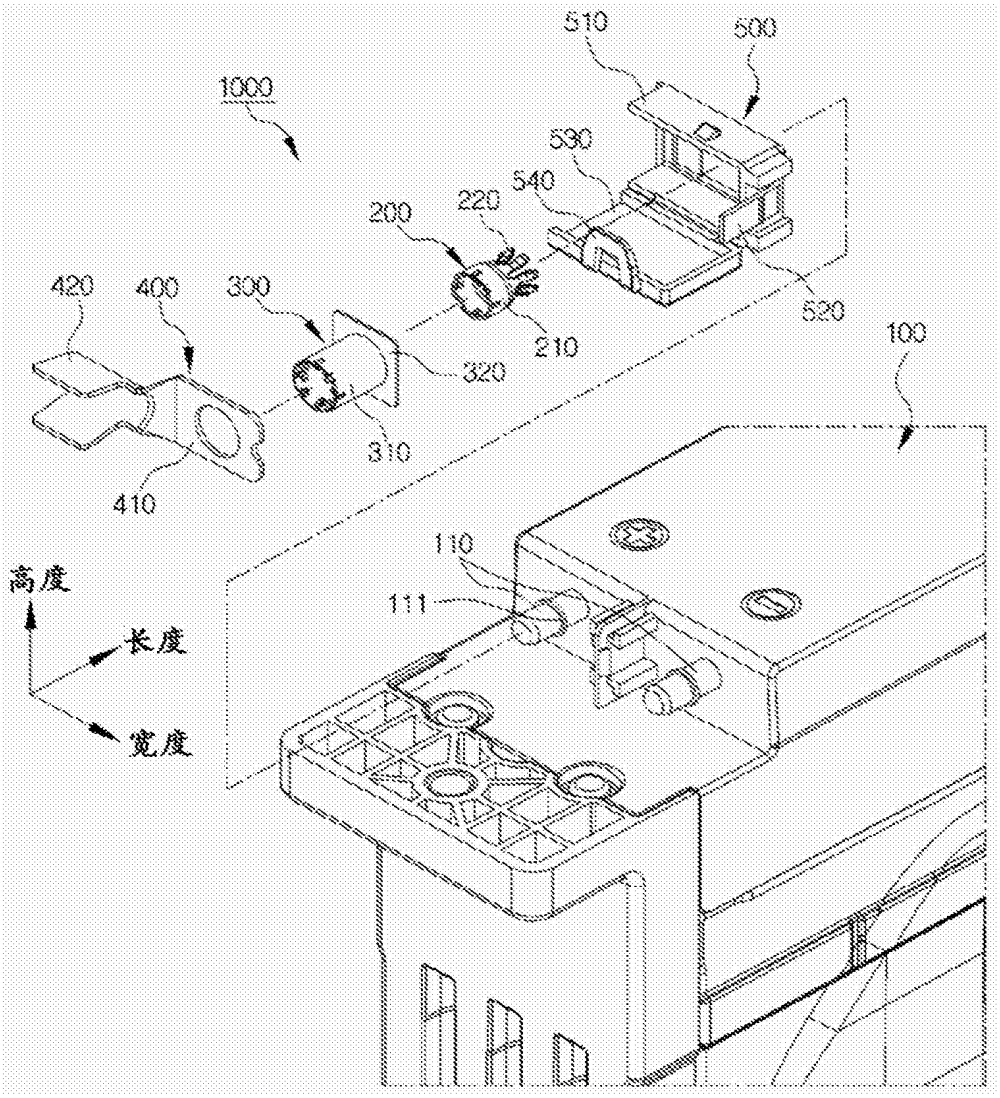


图 1

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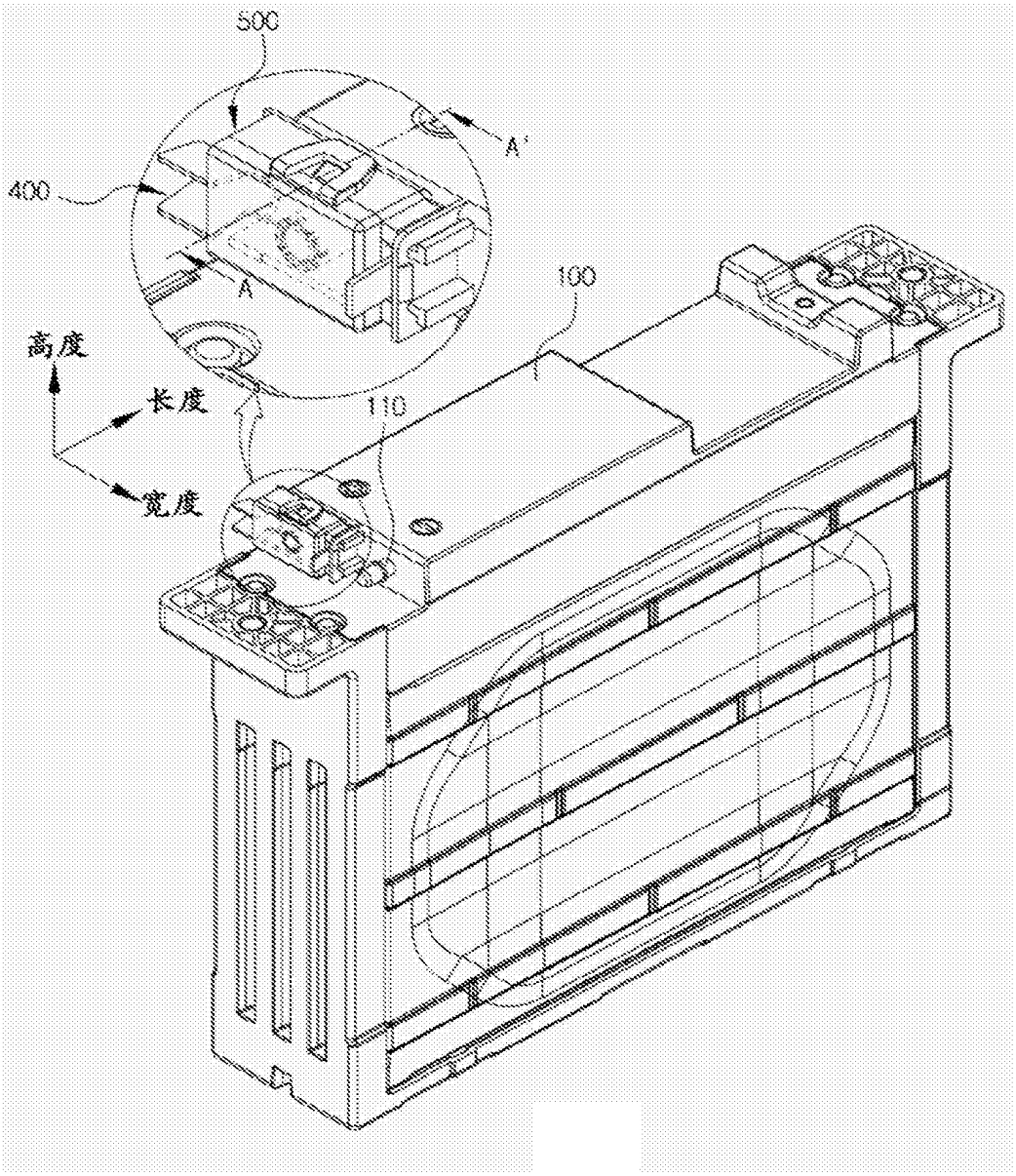


图 2

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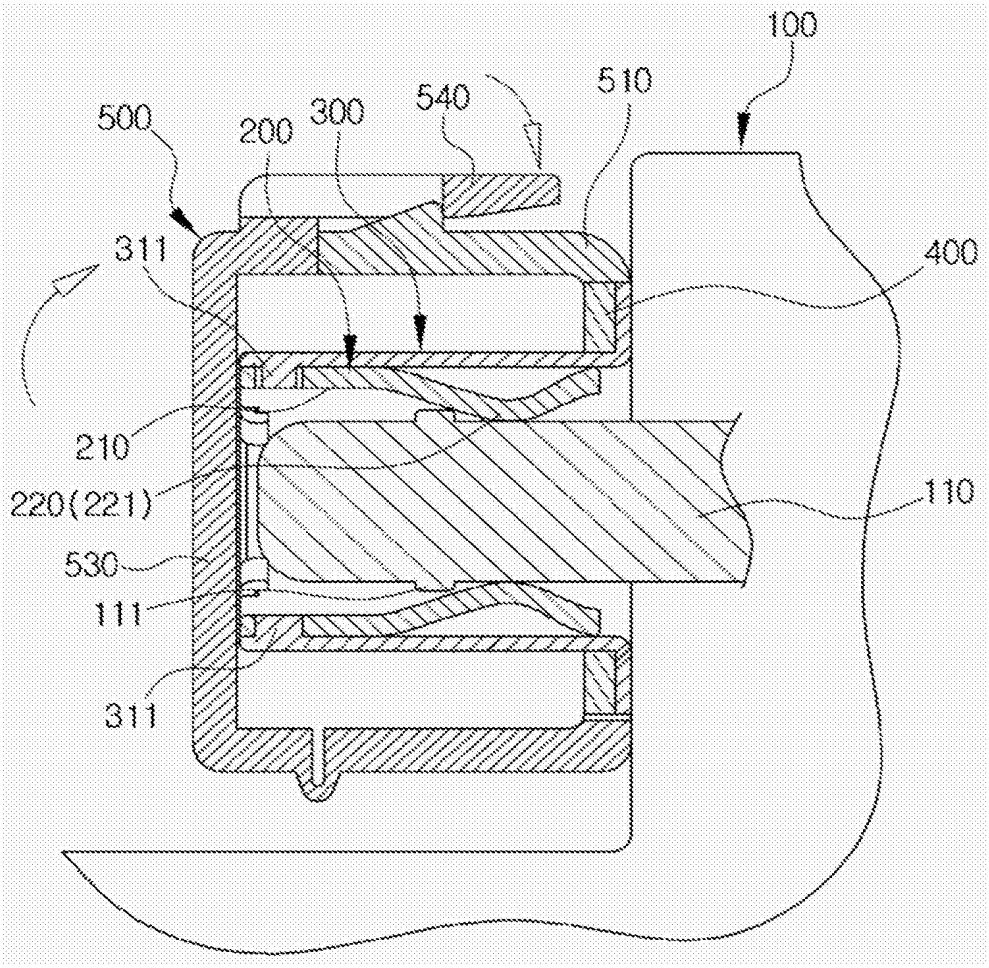


图 3

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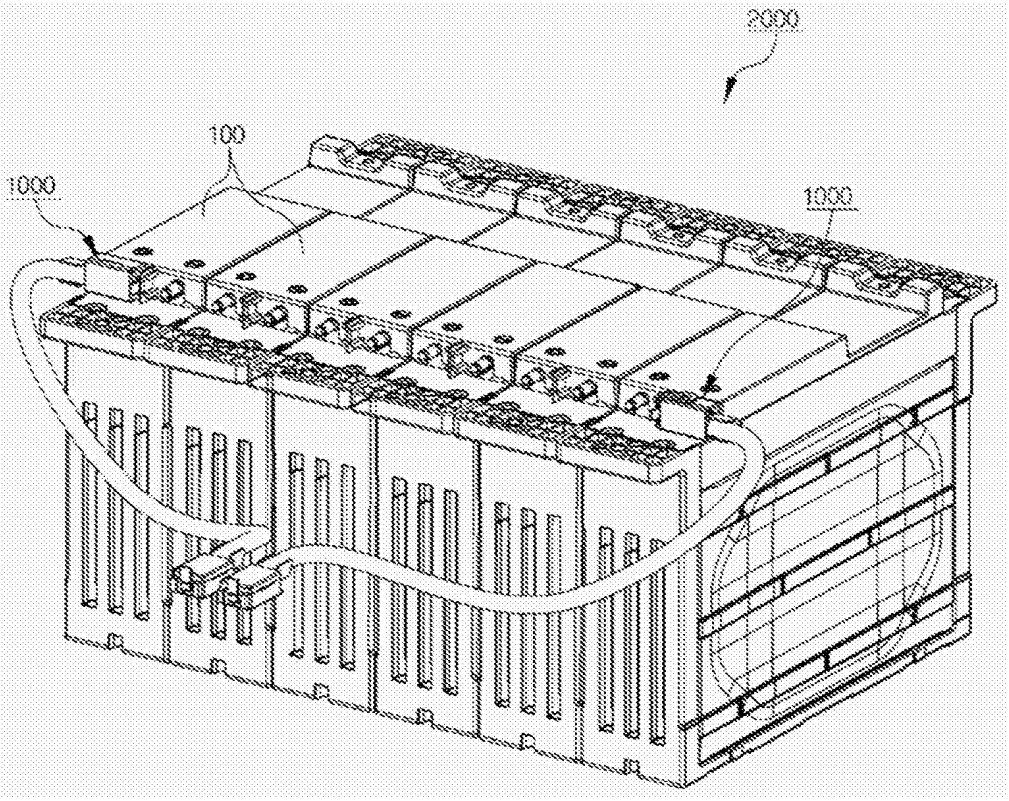


图 4

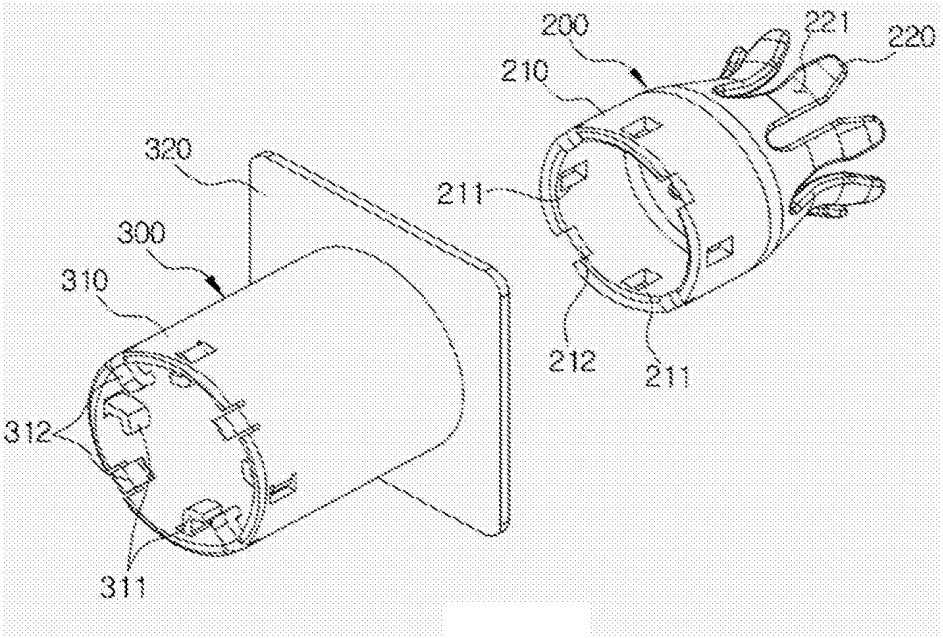


图 5

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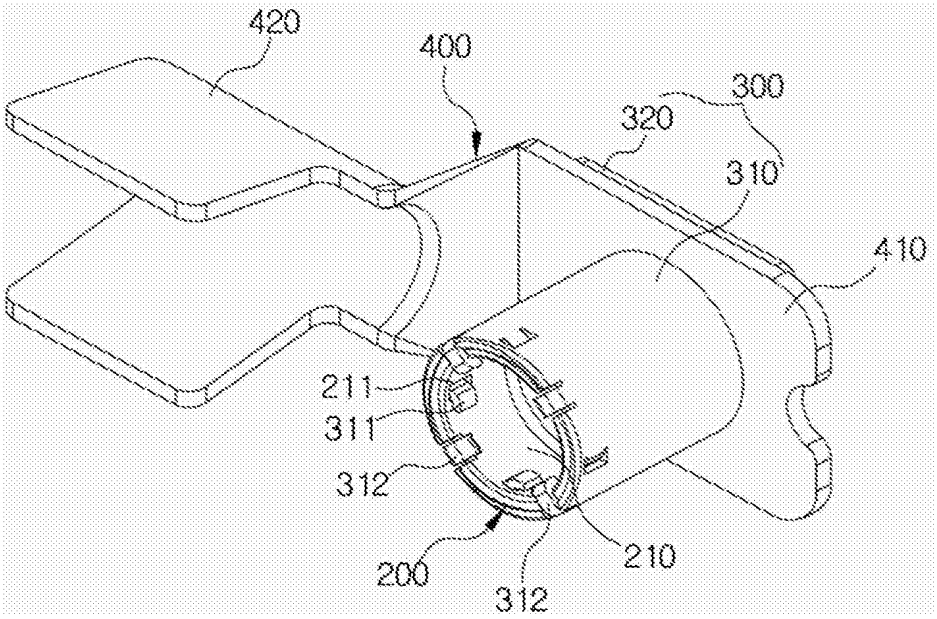


图 6

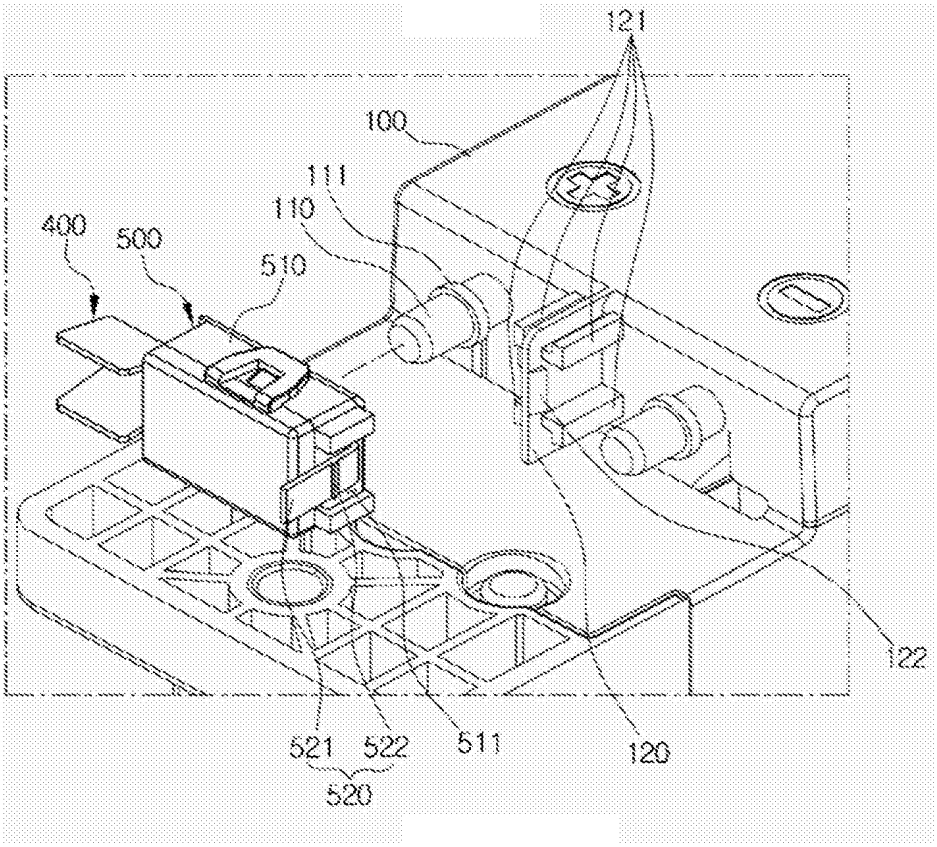


图 7

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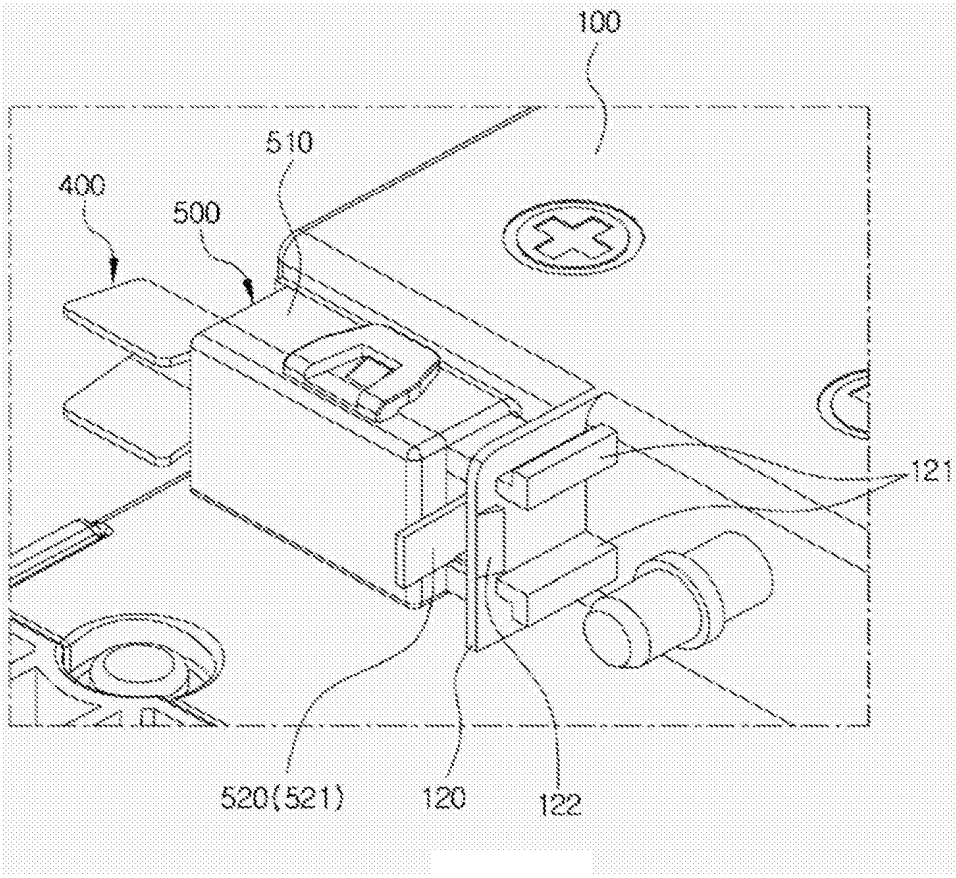


图 8

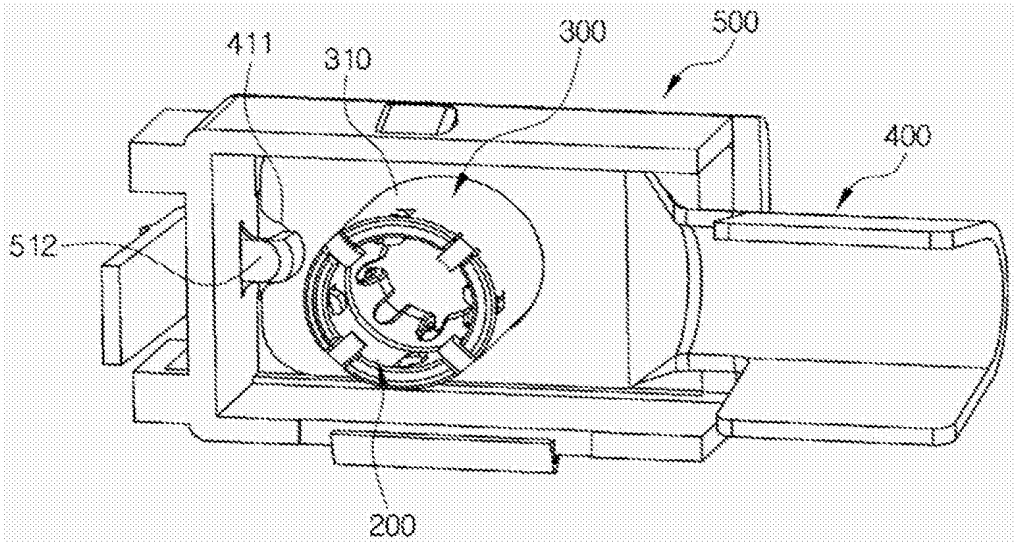


图 9

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Espacenet

CA137883S BATTERY PACK

Applicants: CHERVON LTD

Inventors:

Classifications:

Priorities: CN201030167879F 2010-05-12

Application: CA137883S·2010-11-12

Publication: CA137883S·2011-06-08

Published as: CA137883S;**USD640196S**

BATTERY PACK

Abstract

The design consists of the features of shape, ornament, pattern and configuration of the BATTERY PACK shown in the attached drawings wherein:FIG. 1 is a right side view of a battery pack according to the new design.FIG. 2 is a left side view of the battery pack shown in FIG. 1.FIG. 3 is a front view of the battery pack shown in FIG. 1.FIG. 4 is a rear view of the battery pack shown in FIG. 1.FIG. 5 is a top view of the battery pack shown in FIG. 1.FIG. 6 is a bottom view of the battery pack shown in FIG. 1.FIG. 7 is a perspective view of the battery pack shown in FIG. 1.In the above drawings, the portions shown in stippled lines do not form part of the design.

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Un organisme d'Industrie Canada / An Agency of Industry Canada

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(12)

(21) Application number: **107977D**
(22) Date of filing: **09.04.1907**
(30) Priority:

(71) Applicant: **EMPIRE LIGHT LTD (GB)**
MIESS JACOB HENRY (GB)
(72) Inventor: **MIESS JACOB HENRY (GB)**

(54) **VAPOUR BURNING APPARATUS**
(54) **APPAREIL BRULEUR DE VAPEURS**

This First Page has been artificially created and is not part of the CIPO Official Publication

To all whom it may concern:

Be it known that I, Jacob Henry Mines, of Radcliffe House, Radcliffe Avenue, Hariesden, in the County of Middlesex, England, foreman mechanic, having invented certain new and useful improvements in Vapour Burning Apparatus, do hereby declare that the following is a full, clear, and exact description of the same.

Mines.

J. A. Law, C.E.A.
Patents Desk Stationers
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(1)

Vapour

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Vapour burning apparatus - particularly vapour burning apparatus employed for the production of light by rendering mantles or the like incandescent by flames of vaporised kerosine or similar burning oil - have hitherto been subject to the objection that the orifices of the tubes or chambers (hereinafter referred to as vaporising tubes) in which the oil has been vaporised have been liable to become stopped up by the deposition of carbon and it has consequently been necessary to clean the orifices somewhat frequently, which, though facilities for cleaning are provided, is a considerable drawback, if not prohibitive, to the use of the apparatus.

Now I have found by experiment that the serious obstruction of the orifice of a vaporising tube in this way can be prevented for a very considerable time by the use in the tube of a filling comprising a section of suitable fibrous material, as fibrous asbestos or slag wool, extending for say one third to one half of the length of the vaporising tube from the orifice thereof, from which it is suitably separated as by a layer or layers of wire gauze, and a section of suitable coarsely divided material, as pumice-stone, brick, flint, coke, or iron or copper filings, extending from the fibrous material to, or nearly to, the inlet end of the vaporising tube. To produce the best results the fibrous material must be somewhat loosely arranged, for if it were too much compressed it would interfere unduly with the flow of vapour through the tube; good results may be obtained by charging the tube in such a manner that the

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the density of the section of fibrous material is more or less similar to what would be produced by allowing the material to settle in the tube under the action of its own weight alone if there were no friction between the tube and the material. A certain amount of skill, derived from experience, is consequently required to provide a tube satisfactorily with the filling, and therefore for the convenience of the users of vaporising apparatus there are constructed what are herein called cartridges, each comprising a suitable envelope, formed it may be with a wire-gauze outlet end and adapted to fit into a vaporising tube and containing the fibrous material and the coarse material, together with, it may be, the layer or one of the layers of gauze, so that if a cartridge be suitably inserted into a vaporising tube the latter will be provided with a filling such as hereinbefore described. The length of the cartridge and the character of its charge may vary with the quality of the oil to be used; thus, in some cases I find it sufficient to provide quite a short cartridge (of a length of say from two and a half to five centimetres for a vaporising tube of from fifteen to twenty centimetres long) the envelope of which is suitably charged with the fibrous material but with none of the coarse material; when a filling without an envelope is used its length and character may similarly vary.

An incandescence vapour lamp, the vaporising tube of which is provided with such a filling or cartridge, will burn for a very considerable time without serious diminution

(3).

Witness.

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diminution of light, and when necessary the cartridge can be removed and another substituted therefor with ease and very little loss of time. A further advantage of the use of such fillings is that the cost of manufacture of vapour burning apparatus in which they are to be used is considerably reduced, since the expensive needling devices can be dispensed with.

Fig. 1 of the accompanying illustrative drawings is a longitudinal section of an example of a vaporising tube provided with a filling such as hereinbefore described and Figs. 2 and 3 and Figs. 4 and 5 are respectively views of two examples of vaporising tubes provided with cartridges such as hereinbefore described, Figs. 2 and 4 being longitudinal sections and Figs. 3 and 5 cross sections corresponding respectively to the lines III and V of Figs. 2 and 4. In the example shown in Fig. 1, 1 is the tube and 2 the orifice thereof. 3 is the fibrous material; 4, 4 are two discs of wire gauze arranged between the fibrous material 3 and the orifice 2 of the vaporising tube; and 6 is the coarsely divided material between the fibrous material 3 and the inlet end of the tube 1, in which the material 6 is shown as confined by a gauze cap 4 fitting into the tube 1.

Figs. 2 and 3 show in longitudinal section a vaporising tube 1 provided with an example of a cartridge such as hereinbefore described. The envelope comprises a tube 7 of brass and two wire gauze caps 8 that fit in and are brazed to the tube 7. The envelope contains fibrous material 3, a wire gauze disc 4, and

Kiess.

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Registered Patent Solicitor
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(4).

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and coarse material 5 so that when, as shown, it is placed in a vaporizing tube, which it fits, the latter is provided with a filling like that shown in Fig. 1. If a tube were charged with the fibrous material by pushing it into the tube through one of the ends thereof, the density of the fibrous mass, instead of being uniform, would naturally be greater at the part or parts at which the pressure had been applied than at other parts; in order to obviate such ununiformity of density, it is preferred to form the tube 7 with a slit 9 as shown in Figs. 2 and 3 and charged the tube, through that slit, which is temporarily opened sufficiently for the purpose; the slit 9, moreover, enables the tube 7 to spring somewhat and so to fit tubes 1 that differed slightly in their diametres. To enable the cartridge to be drawn into the vaporizing tube instead of being pushed thereinto, the cap 8 at its outlet end may, as shown, be provided with a ring or eyelet 8 into which the bent end of a wire passed through the vaporizing tube may be inserted.

Figs. 4 and 5 show a vaporizing tube provided with a cartridge like that shown in Figs 2 and 3 except that it is shorter and contains none of the coarse material 5. The cap 8 remote from the gauze disc 4 may in this case be omitted.

Mi.ms.

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WHAT I CLAIM AS MY INVENTION IS:-

1. A vapour-burning apparatus vaporising tube or chamber containing a charge of suitable fibrous material, as fibrous asbestos or slag wool, somewhat loosely arranged and extending from near the outlet of said tube or chamber towards the inlet thereof, a layer or layers of wire gauze located between said fibrous material and said outlet, and suitable coarsely divided material, as pumice-stone, brick, flint, or coke, or iron or copper filings, located between said fibrous material and said inlet.

2. A cartridge adapted to fit in a vapour-burning apparatus vaporising tube or chamber and comprising an envelope having a wire-gauzed closure and containing adjacent to said closure a charge of suitable fibrous material, as fibrous asbestos or slag wool somewhat loosely arranged therein.

3. A cartridge adapted to fit in a vapour-burning apparatus vaporising tube or chamber and comprising an envelope having a wire-gauze and closure and containing adjacent to said closure a charge of suitable fibrous material, as fibrous asbestos or slag wool, somewhat loosely arranged therein and suitable coarsely divided material, as pumice-stone, brick, flint, or coke, or iron or copper filings, located adjacent to said fibrous material and with said fibrous material between it and said closure.

4. A cartridge adapted to fit in a vapour-burning apparatus vaporising tube or chamber and comprising an envelope having a wire-gauze and closure and containing adjacent to said closure a

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charge of suitable fibrous material, as fibrous asbestos or slag wool, somewhat loosely arranged therein and provided with an attachment adapted to enable said cartridge to be drawn into the vaporising tube or chamber by means of a heat wire.

5. A cartridge adapted to fit in a vapour-burning- apparatus vaporising tube or chamber and comprising a tubular envelope split longitudinally and having a wire-gauze closure and containing adjacent to said closure a charge of suitable fibrous material, as fibrous asbestos or slag wool somewhat loosely arranged therein.

6. A vapour-burning-apparatus vaporising tube or chamber containing a cartridge fitting therein and comprising an envelope having a wire-gauze and closure and containing adjacent to said closure a charge of suitable fibrous material, as fibrous asbestos or slag wool, somewhat loosely arranged therein.

7. A vapour-burning-apparatus vaporising tube or chamber containing a cartridge fitting therein and comprising an envelope having a wire-gauze and closure and containing adjacent to said closure a charge of suitable fibrous material, as fibrous asbestos or slag wool, somewhat loosely arrangetherein and extending from near the outlet of said tube or chamber towards the inlet thereof for at least one third of the length of said tube or chamber.

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Fig.1.

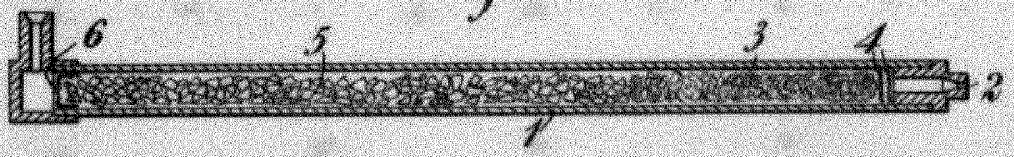


Fig.2.

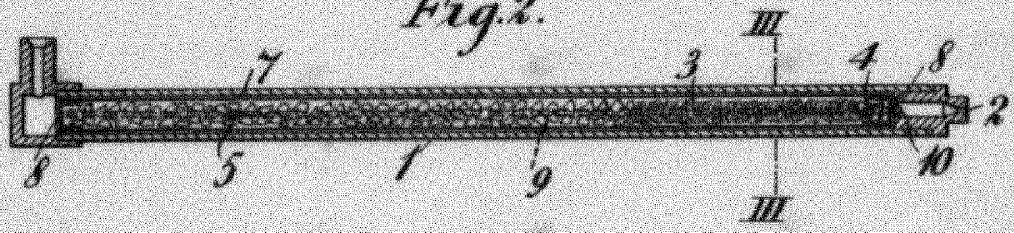


Fig.3.

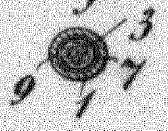


Fig.4.

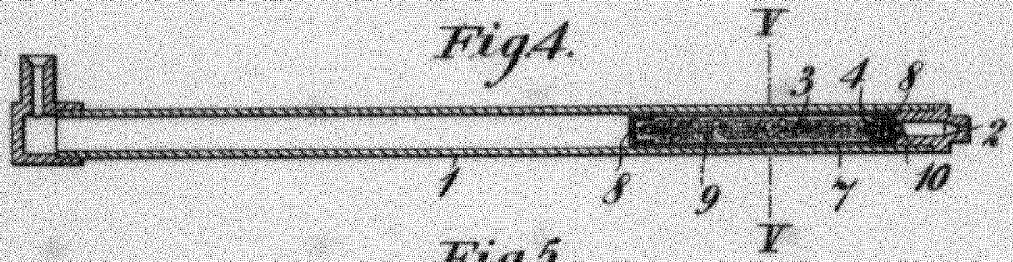
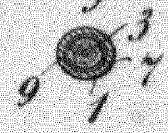


Fig.5.



Certified to be the Drawings referred to in the specification hereunto annexed.

Witnesses.
Wm. A. Hyman
M. C. Lyon

Ottawa April 8th 1907 Inventor:
J. H. Meiss.

By _____ his Atty's.

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Espacenet

CN201947042U Vehicle-mounted emergency power supply device

Applicants: SHENZHEN SIBEISHENG ELECTRONIC TECHNOLOGY CO LTD

Inventors: ZHANGSHENG CHEN

Classifications:
IPC ***H02J7/34; H02J9/04;***

Priorities: CN201020645728U 2010-12-07

Application: CN201947042U·2010-12-07

Publication: CN201947042U·2011-08-24

Published as: CN201947042U

Vehicle-mounted emergency power supply device

Abstract

The utility model provides a vehicle-mounted emergency power supply device, which comprises a singlechip, an output control unit, a lithium battery and an ignition output unit, wherein the output control unit is connected with the singlechip and the lithium battery respectively, and the lithium battery is connected with the singlechip; and the vehicle-mounted emergency power supply device also comprises a power consumption device connected with the output control unit. The vehicle-mounted emergency power supply device has the following beneficial effects: as the vehicle-mounted emergency power supply device comprises the ignition output unit and the power consumption device connected with the output control unit, when an automobile cannot be ignited, the automobile can be ignited through the ignition output unit, and the power consumption device can be a color change warning LED (light-emitting diode) sign or a light-adjustable flashlight; moreover, as the lithium battery supplies power to the color change warning LED (light-emitting diode) sign or the light-adjustable flashlight, the problem of being incapable of use the power consumption device due to the insufficient power of the power consumption device is effectively solved.

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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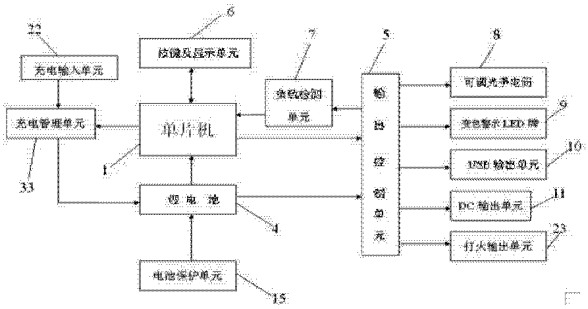
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(54)实用新型名称

车载应急电源装置

(57)摘要

本实用新型提供了一种车载应急电源装置，包括单片机、输出控制单元、锂电池、打火输出单元，所述输出控制单元分别与所述单片机和所述锂电池相连，所述锂电池与所述单片机相连；该车载应急电源装置还包括与所述输出控制单元相连的用电装置。本实用新型的有益效果是：由于该车载应急电源装置包括打火输出单元及与所述输出控制单元相连的用电装置，当汽车出现打不火的时候，可通过该打火输出单元进行打火，该用电装置可以为变色警示 LED 牌或可调光手电筒，通过锂电池对变色警示 LED 牌或调光手电筒进行供电，有效的解决了用电装置的电量不足而无法使用的问题。



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1. 一种车载应急电源装置，其特征在于：包括单片机（1）、输出控制单元（5）、锂电池（4）、打火输出单元（23），所述输出控制单元（5）分别与所述单片机（1）和所述锂电池（4）相连，所述锂电池（4）与所述单片机（1）相连；该车载应急电源装置还包括与所述输出控制单元（5）相连的用电装置。

2. 根据权利要求 1 所述的车载应急电源装置，其特征在于：所述打火输出单元（23）包括与所述输出控制单元（5）相连的打火输出接口（111）、以及与所述打火输出接口（111）相连的电压侦测唤醒单元（12），所述打火输出接口（111）用于与汽车电瓶相连，所述电压侦测唤醒单元（12）与所述单片机（1）相连；所述电压侦测唤醒单元（12）包括用于检查汽车电瓶电压的汽车电瓶电压检测单元（121），所述汽车电瓶电压检测单元（121）根据检测到的电压控制所述打火输出接口（111）的供电状态。

3. 根据权利要求 2 所述的车载应急电源装置，其特征在于：该车载应急电源装置还包括直流电输出模块，所述直流电输出模块与所述输出控制单元（5）相连，所述电压侦测唤醒单元（12）还包括唤醒单元（122），当汽车电瓶与所述打火输出接口相连时，所述唤醒单元（122）通知单片机（1）汽车电瓶已接入，单片机（1）发出指令使打火输出接口（111）输出电流。

4. 根据权利要求 3 所述的车载应急电源装置，其特征在于：该车载应急电源装置还包括充电输入单元（22）和充电管理单元（33），所述充电输入单元（22）与所述充电管理单元（33）相连，所述充电管理单元（33）分别与所述单片机（1）和所述锂电池（4）相连。

5. 根据权利要求 4 所述的车载应急电源装置，其特征在于：该车载应急电源装置还包括与所述锂电池（4）相连的电池均衡保护单元（15），该车载应急电源装置还包括与所述单片机（1）相连的按键及显示单元（6）。

6. 根据权利要求 5 所述的车载应急电源装置，其特征在于：所述直流电输出模块的输出接口包括 USB 输出单元（10）和 DC 输出单元（11）；该 USB 输出单元（10）和 DC 输出单元（11）分别与输出控制单元（5）相连。

7. 根据权利要求 6 所述的车载应急电源装置，其特征在于：所述充电输入单元（22）包括开关电源单元（2），所述充电管理单元（33）包括充电电流检测单元（13）、PWM 充电电路单元（3）和电池电量侦测单元（14），所述开关电源单元（2）分别与所述单片机（1）、所述输出控制单元（5）及 PWM 充电电路单元（3）相连，所述 PWM 充电电路单元（3）分别与所述单片机（1）和所述充电电流检测单元（13）相连，所述充电电流检测单元（13）分别与所述锂电池（4）和所述单片机（1）相连，所述电池电量侦测单元（14）分别与所述锂电池（4）和所述单片机（1）相连。

8. 根据权利要求 7 所述的车载应急电源装置，其特征在于：该车载应急电源装置包括负载检测单元（7），所述唤醒单元（122）包括三极管 Q6 以及用于取样的分压电阻 R59 和 R60，所述用电设备电压检测单元（121）包括检测电阻 R38 和 R41。

9. 根据权利要求 1 至 8 任一项所述的车载应急电源装置，其特征在于：所述用电装置为变色警示 LED 牌（9），所述变色警示 LED 牌（9）与磁铁相连，所述磁铁外表面包裹有硅胶套。

10. 根据权利要求 1 至 8 任一项所述的车载应急电源装置，其特征在于：所述用电装置为可调光手电筒（8）。

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车载应急电源装置

技术领域

[0001] 本实用新型涉及电源领域，尤其涉及一种车载应急电源装置。

背景技术

[0002] 在现实生活中，随着科技水平的日新月异，人们生活水准的日益提高，汽车已经成为极其重要的交流工具，但汽车常常会遇到打不着火的问题，特别是在旅途中的汽车，因电瓶电量不足很难将车打着火，给使用者带来很多不便，而且汽车上的许多用电装置会因常时间使用而耗尽电量，例如USB手电筒和LED警示牌都会因电量耗尽而无法使用，这样给用户带来了很多麻烦。

实用新型内容

[0003] 为了解决现有技术中的上述技术问题，本实用新型提供了一种车载应急电源装置。

[0004] 本实用新型提供了一种车载应急电源装置，包括单片机、输出控制单元、锂电池、打火输出单元，所述输出控制单元分别与所述单片机和所述锂电池相连，所述锂电池与所述单片机相连；该车载应急电源装置还包括与所述输出控制单元相连的用电装置。

[0005] 作为本实用新型的进一步改进，所述打火输出单元包括与所述输出控制单元相连的打火输出接口、以及与所述打火输出接口相连的电压侦测唤醒单元，所述打火输出接口用于与汽车电瓶相连，所述电压侦测唤醒单元与所述单片机相连；所述电压侦测唤醒单元包括用于检查汽车电瓶电压的汽车电瓶电压检测单元，所述汽车电瓶电压检测单元根据检测到的电压控制所述打火输出接口的供电状态。

[0006] 作为本实用新型的进一步改进，该车载应急电源装置还包括直流电输出模块，所述直流电输出模块与所述输出控制单元相连，所述电压侦测唤醒单元还包括唤醒单元，当汽车电瓶与所述打火输出接口相连时，所述唤醒单元通知单片机汽车电瓶已接入，单片机发出指令使打火输出接口输出电流。

[0007] 作为本实用新型的进一步改进，该车载应急电源装置还包括充电输入单元和充电管理单元，所述充电输入单元与所述充电管理单元相连，所述充电管理单元分别与所述单片机和所述锂电池相连。

[0008] 作为本实用新型的进一步改进，该车载应急电源装置还包括与所述锂电池相连的电池均衡保护单元，该车载应急电源装置还包括与所述单片机相连的按键及显示单元。

[0009] 作为本实用新型的进一步改进，所述直流电输出模块的输出接口包括USB输出单元和DC输出单元；该USB输出单元和DC输出单元分别与输出控制单元相连。

[0010] 作为本实用新型的进一步改进，所述充电输入单元包括开关电源单元，所述充电管理单元包括充电电流检测单元、PWM充电电路单元和电池电量侦测单元，所述开关电源单元分别与所述单片机、所述输出控制单元及PWM充电电路单元相连，所述PWM充电电路单元分别与所述单片机和所述充电电流检测单元相连，所述充电电流检测单元分别与所述锂电

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池和所述单片机相连，所述电池电量侦测单元分别与所述锂电池和所述单片机相连。

[0011] 作为本实用新型的进一步改进，该车载应急电源装置包括负载检测单元，所述唤醒单元包括三极管 Q6 以及用于取样的分压电阻 R59 和 R60，所述用电设备电压检测单元包括检测电阻 R38 和 R41。

[0012] 作为本实用新型的进一步改进，所述用电装置为变色警示 LED 牌，所述变色警示 LED 牌与磁铁相连，所述磁铁外表面包裹有硅胶套。

[0013] 作为本实用新型的进一步改进，所述用电装置为可调光手电筒。

[0014] 本实用新型的有益效果是：由于该车载应急电源装置包括打火输出单元及与所述输出控制单元相连的用电装置，当汽车出现打不火的时候，可通过该打火输出单元进行打火，该用电装置可以为变色警示 LED 牌或可调光手电筒，通过锂电池对变色警示 LED 牌或调光手电筒进行供电，有效的解决了用电装置的电量不足而无法使用的问题。

附图说明

[0015] 图 1 是本实用新型的原理框图。

[0016] 图 2 是本实用新型的一个实施例框图。

[0017] 图 3 是本实用新型的 PWM 充电电路单元图。

[0018] 图 4 是本实用新型的打火输出单元电路图。

[0019] 图 5 是本实用新型的 DC 降压输出控制电路。

[0020] 图 6 是本实用新型的 DC 升压输出控制和电流检测电路。

[0021] 图 7 是本实用新型的 USB 降压输出和电流检测电路。

具体实施方式

[0022] 如图 1 和图 2 所示，本实用新型公开了一种车载应急电源装置，该车载应急电源装置包括直流电输出模块和打火输出单元 23，该车载应急电源装置实现了直流电输出模块和打火输出单元 23 的管理。

[0023] 该车载应急电源装置包括单片机 1、输出控制单元 5、锂电池 4、打火输出单元 23，所述输出控制单元 5 分别与所述单片机 1 和锂电池 4 相连，所述打火输出单元 23 包括与所述输出控制单元 5 相连的打火输出接口 111、以及与打火输出接口 111 相连的电压侦测唤醒单元 12，打火输出接口 111 与汽车电瓶相连，所述电压侦测唤醒单元 12 与所述单片机 1 相连；所述电压侦测唤醒单元 12 包括用于检查汽车电瓶电压的汽车电瓶电压检测单元 121，所述汽车电瓶电压检测单元 121 根据检测到的电压控制所述打火输出接口 111 的供电状态。所述的供电状态是指使打火输出接口 111 继续供电或者断电。

[0024] 如图 4 所示，该车载应急电源装置还包括直流电输出模块，所述直流电输出模块与所述输出控制单元 5 相连，所述电压侦测唤醒单元 12 还包括唤醒单元 122，当电瓶与打火输出接口 111 相连时，所述唤醒单元 122 通知单片机 1 电瓶已接入，单片机 1 发出指令使打火输出接口 111 输出电流。所述唤醒单元 122 包括三极管 Q7 以及用于取样的分压电阻 R73 和 R74，所述用电设备电压检测单元 121 包括检测电阻 R75 和 R76。

[0025] 在本实施例中，当该汽车电瓶与打火输出接口 111 相连时，唤醒单元 122 通知单片机 1 汽车电瓶已经接入，单片机 1 控制打火输出接口 111 瞬间输出大电流进行打火，然后再

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通过用电设备电压检测单元 121 对电瓶电压进行检测，如电瓶电压恢复正常，那么关闭打火输出单元 23。即当该车载应急电源装置接入汽车电瓶，通过唤醒单元 122 的分压电阻 R73 和 R74 取样，控制三极管 Q7 导通，通知单片机 1 汽车电瓶已经接入，单片机 1 让继电器 K1 吸合，汽车打火时，经过大电流控制元件 NTC1~NTC6 瞬间大电流输出完成打火，汽车启动通过检测电阻 R75 和 R76 分压检测汽车电瓶电压，当电瓶电压恢复正常，自动关闭继电器 K1，防止长时间大电流输出损坏锂电池 4。该打火输出单元 23 用于汽车打火时，实现了大电流输出保护，防输出短路控制，接入汽车自动识别，打火完成自动关机。打火输出接口 111 瞬间输出电流为 200A，满足大多数家用小汽车。

[0026] 如图 7 所示，该直流电输出模块的输出接口包括 USB 输出单元 10 和 DC 输出单元 11；该 USB 输出单元 10 和 DC 输出单元 11 分别与输出控制单元 5 相连。该 DC 输出单元 11 为多档位电压输出单元，图 5 为 DC 降压输出控制电路，该电路完成 5V、8.4V、9.5V 的降压输出，图 6 为 DC 升压输出控制和电流检测电路，该电路完成 12V、16V、19V、24V 的升压输出，通过该两电路完成 DC5V、8.4V、9.5V、12V、16V、19V、24V 多档位电压输出。

[0027] 该打火输出接口 111 输出电流工作时，所述单片机 1 切断所述锂电池 4 对所述直流电输出模块的供电，从而保证了对打火输出单元 23 的电流供给。

[0028] 如图 1 至图 3 所示，为了提高锂电池 4 的寿命，需对锂电池 4 进行管理，以防止过充过放现象的发生，所以该车载应急电源装置还包括充电输入单元 22 和充电管理单元 33，所述充电输入单元 22 与所述充电管理单元 33 相连，所述充电管理单元 33 分别与所述单片机 1 和所述锂电池 4 相连。该充电管理单元 33 包括 PWM 充电电路单元 3、充电电流检测单元 13 和电池电量侦测单元 14；所述充电输入单元 22 包括开关电源单元 2。所述开关电源单元 2 分别与所述单片机 1、所述输出控制单元 5 及 PWM 充电电路单元 3 相连，所述 PWM 充电电路单元 3 分别与所述单片机 1 和所述充电电流检测单元 13 相连，所述充电电流检测单元 13 分别与所述锂电池 4 和所述单片机 1 相连，所述电池电量侦测单元 14 分别与所述锂电池 4 和所述单片机 1 相连。

[0029] 该车载应急电源装置还包括与所述锂电池 4 相连的电池均衡保护单元 15，该车载应急电源装置还包括与所述单片机 1 相连的按键及显示单元 6，该按键及显示单元 6 包括按键 20 及 LCD 显示器 18。通过按键 20 完成所有功能的切换，例如在直流电输出模块状态下默认 USB 输出单元 10 处于工作状态，按一下按键 20，从 USB 输出单元 10 切换至 DC 输出单元 11，再按一下按键 20，又从 DC 输出单元 11 切换至打火输出单元 23，即通过按键 20 完成了各功能的循环切换。而且各模块的工作状态均通过 LCD 显示器 18 显示出来，以供用户观看。

[0030] 该车载应急电源装置还包括负载检测单元 7，该负载检测单元 7 为分别与所述输出控制电路 5 和所述单片机 1 相连的输出电流检测单元 17。输出电流检测单元 17 是用来检测输出电流大小，其作用是完成 DC 最大输出功率限制。

[0031] 所述用电装置为变色警示 LED 牌 9，所述变色警示 LED 牌 9 与磁铁相连，所述磁铁外表面包裹有硅胶套。当变色警示 LED 牌 9 没电或电量不足时，通过锂电池 4 为变色警示 LED 牌 9 提供电源，因为磁铁外表面包裹有硅胶套，所以当将变色警示 LED 牌 9 放置在车顶时不会刮伤车体，而且还会通过磁铁将 LED 警示牌定位在车体上。

[0032] 该用电装置还可以是可调光手电筒 8，可调光手电筒 8 可以在该车载应急电源装

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置上进行插拔。变色警示 LED 牌 9 可以与该车载应急电源装置固定连接在一起。

[0033] 以上内容是结合具体的优选实施方式对本实用新型所作的进一步详细说明，不能认定本实用新型的具体实施只局限于这些说明。对于本实用新型所属技术领域的普通技术人员来说，在不脱离本实用新型构思的前提下，还可以做出若干简单推演或替换，都应当视为属于本实用新型的保护范围。

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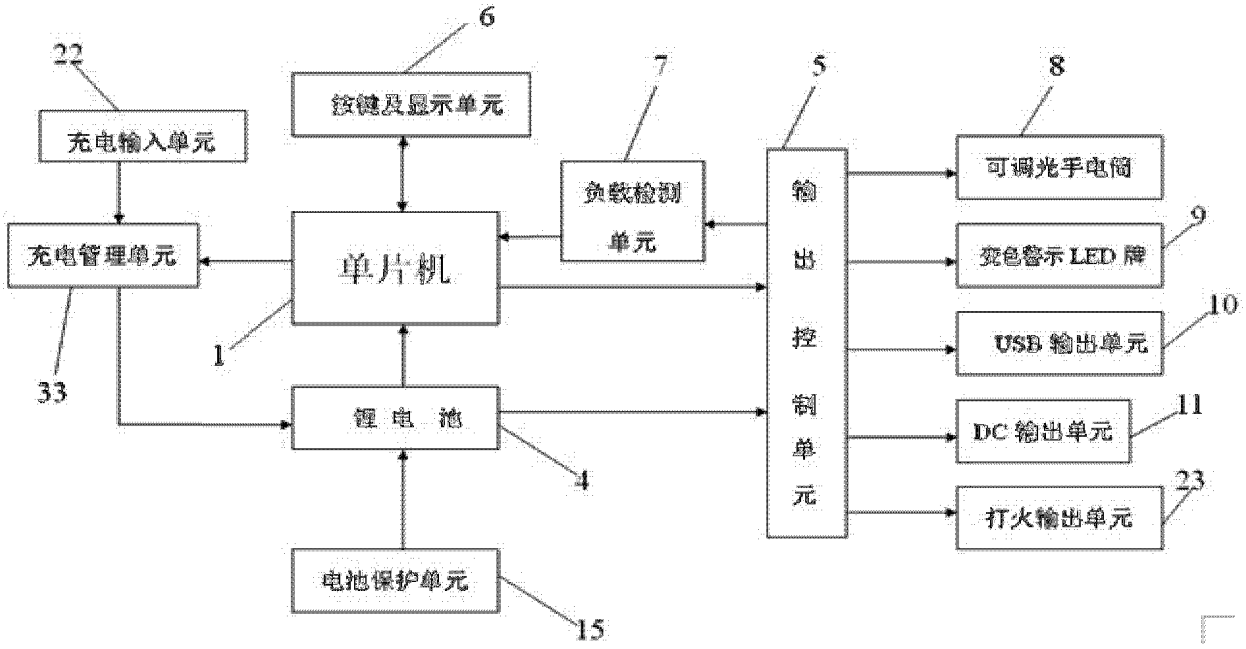


图 1

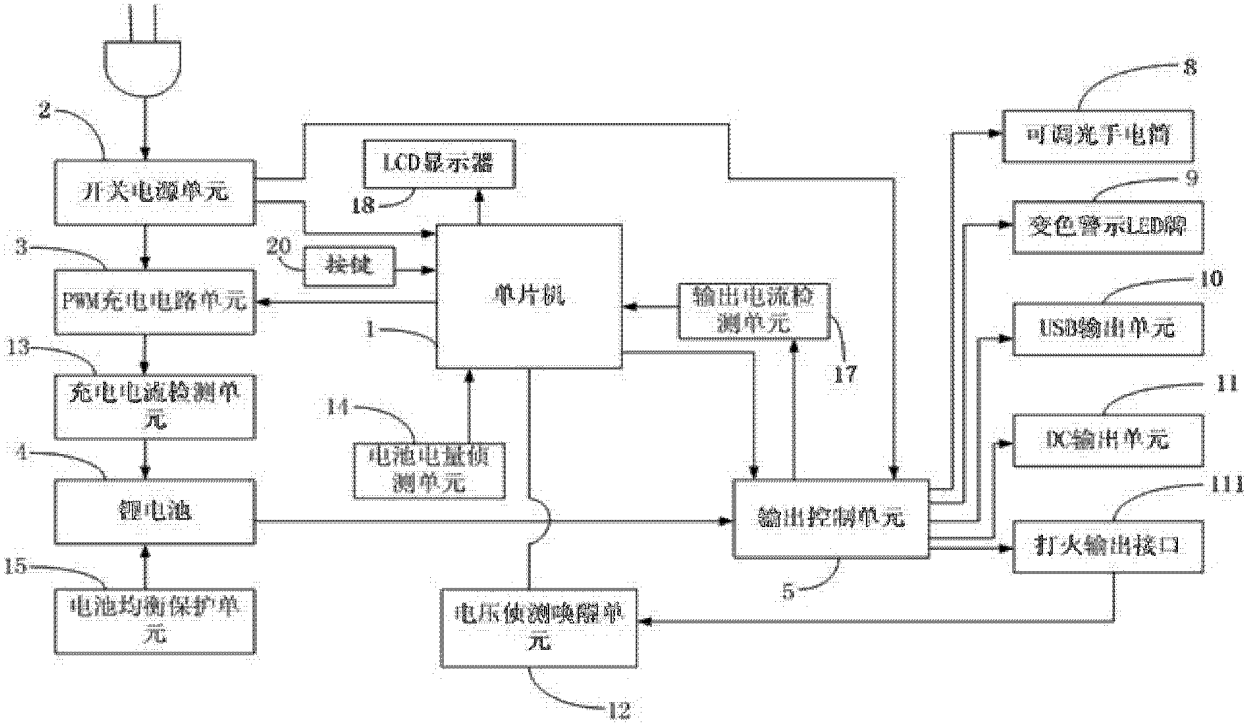


图 2

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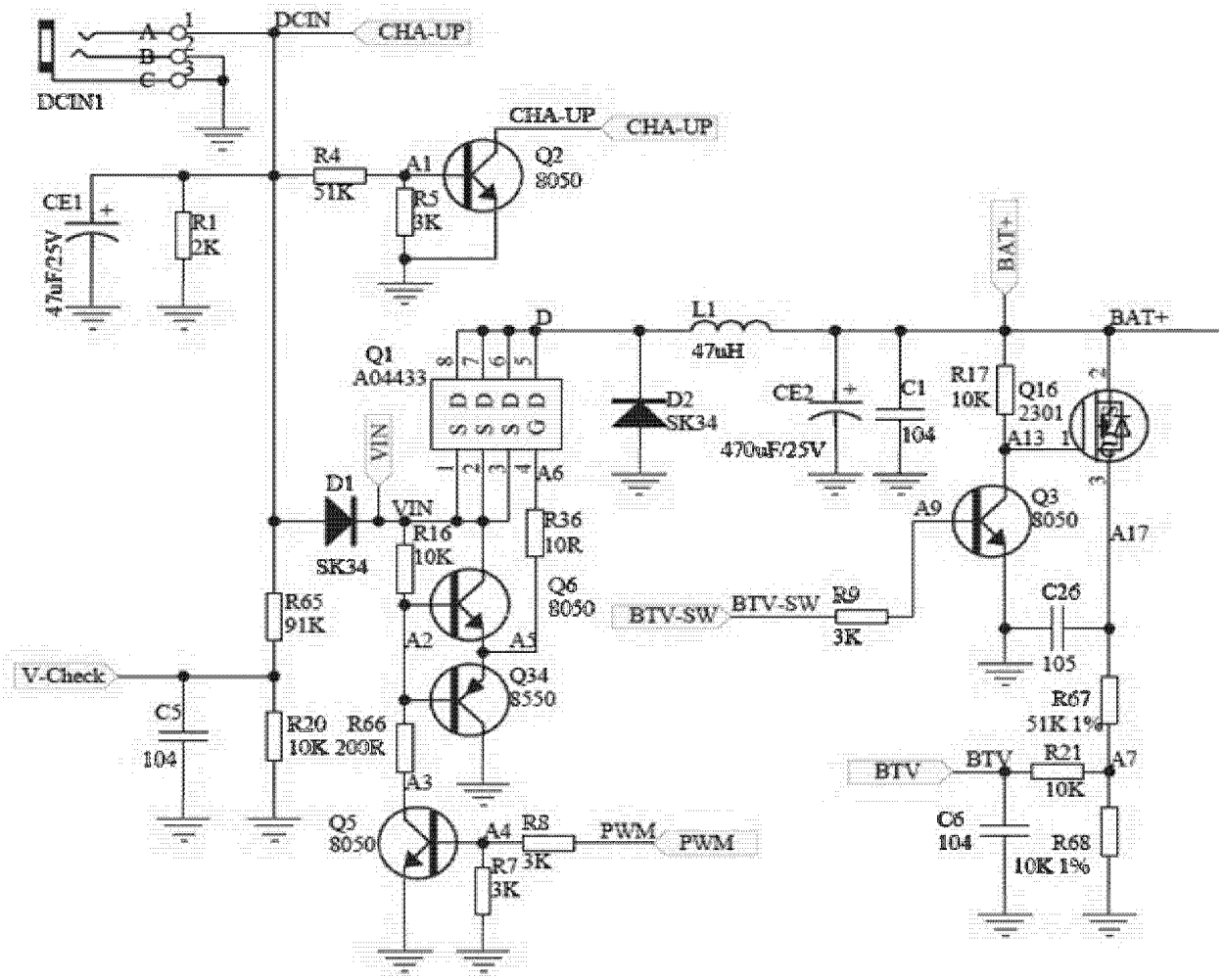


图 3

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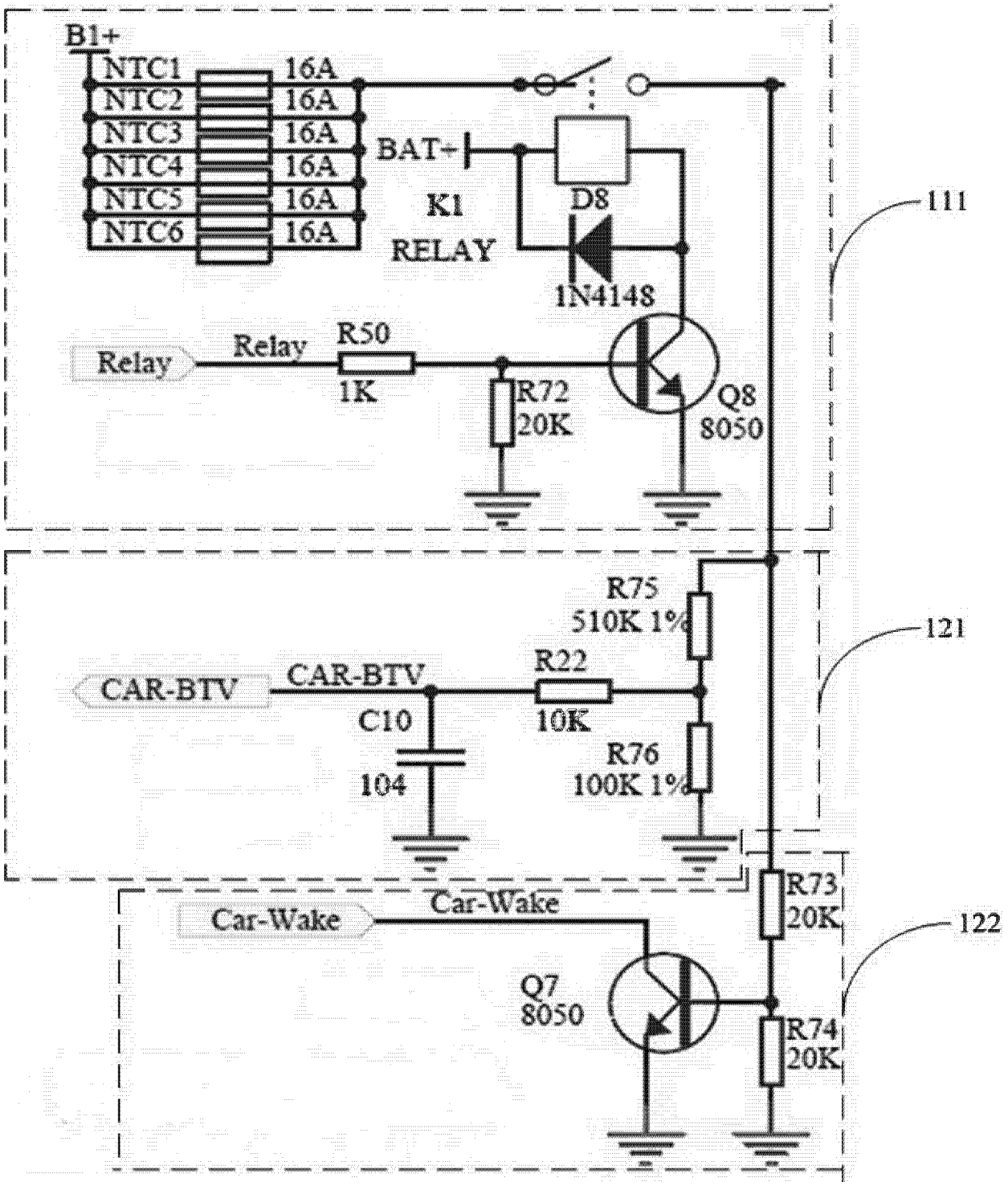


图 4

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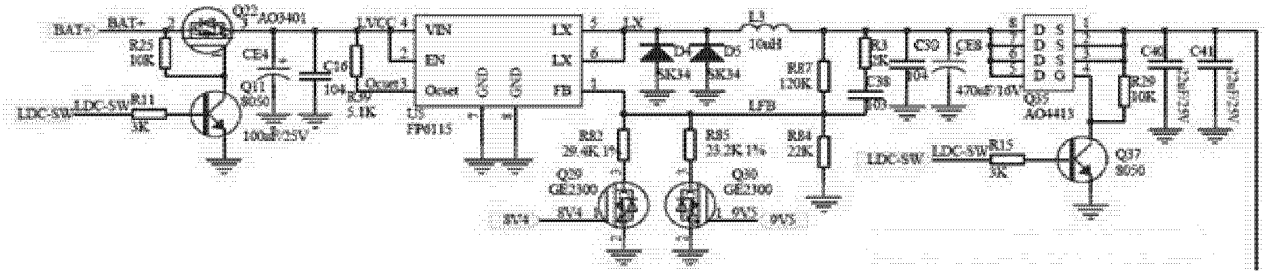


图 5

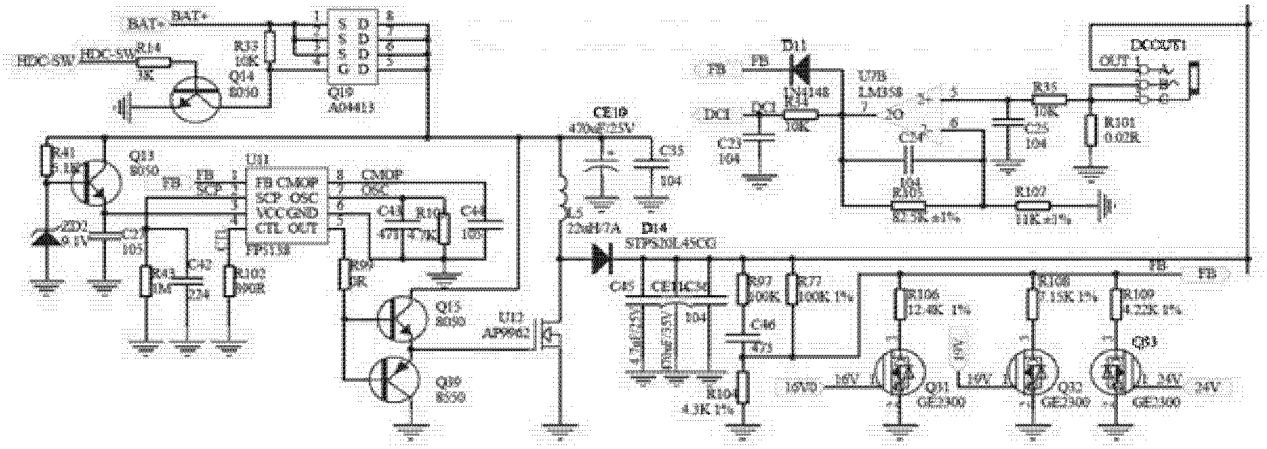


图 6

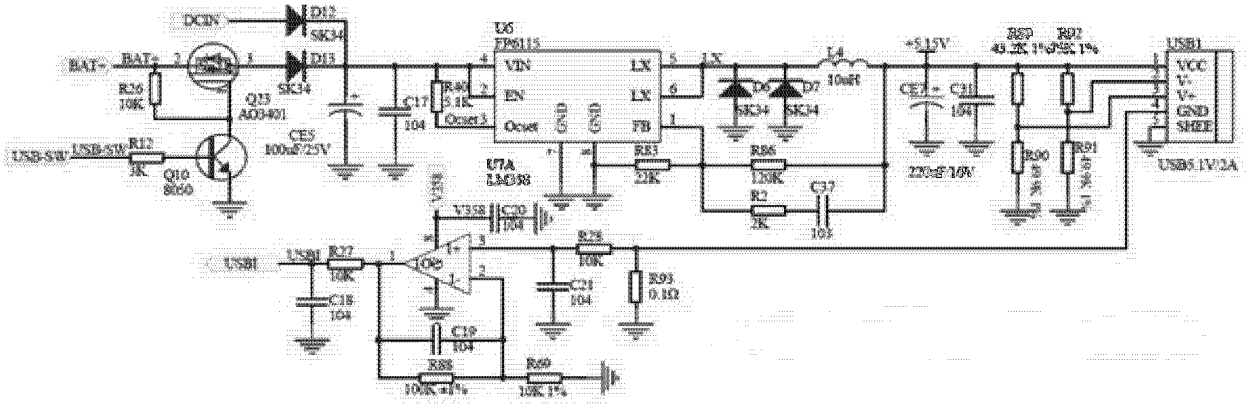


图 7

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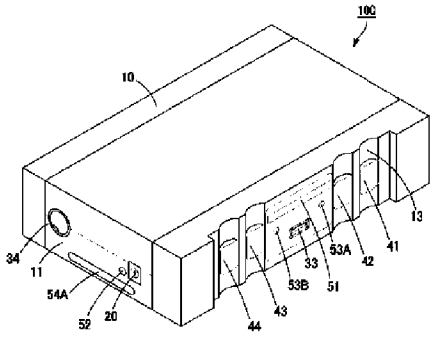
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(54)【考案の名称】車両用補助給電装置

(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



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DESCRIPTION JP3182855U

10 Auxiliary power supply device for vehicles

[0001]

14 The present invention is for jump-starting the engine by connecting to the in-vehicle battery and supplying electric power to the electric load of the vehicle including the starter for starting the engine when the battery of the vehicle is exhausted. Regarding auxiliary power supply device for vehicles.

[0002]

21 Conventionally, for example, on the road, when the battery mounted on the vehicle tends to be discharged due to an increase in the amount of electricity consumed, the battery capacity becomes insufficient, the voltage drops, and the electrical components do not operate (so-called battery exhaustion). In some cases), a jump start is performed in which the engine is started by supplying electric power from the battery of another automobile or an emergency portable power source (jump starter) via a booster cable. Then, various proposals have been made such as a technique for facilitating electrical connection for jump start (see, for example, Patent Documents 1 and 2) and a technique for determining jump start (for example, see Patent Document 3).

[0003]

33 Conventionally, a sealed lead-acid battery has been used in a jump starter because of the relationship between cost and capacity.

[0004]

38 In addition, information devices such as battery-powered notebook PCs that can be charged using an AC adapter and their ancillary devices have become widespread.

40 In addition, a large number of in-vehicle electric devices that can be used by connecting to a DC12V / 24V in-vehicle power socket, that is, a so-called cigar socket, which is installed as standard in the vehicle, are provided.

43 Further, in recent years, power-saving and driveable electronic devices such as mobile phones and portable music players that can be powered by USB (Universal Serial Bus) are widely used. Traditionally, portable power supplies have been used to use electrical equipment outdoors.

[0005]

49 特開２００４－１３４２７８号公報

50 特開２０１１－９７７１０号公報

51 特開２００７－２７８２１６号公報

[0006]

55 By the way, a conventional jump starter using a general sealed lead-acid battery weighs about 5 to 7 kg, and has a problem of lacking portability.

57 Further, it took about 10 to 15 hours on average to fully charge the battery, and the number of times that the vehicle could be started (jump start) in the fully charged state was about 5 times on average.

60 Furthermore, lead-acid batteries deteriorate faster when over-discharged or over-charged, and self-discharge tends to proceed. The discharge rate of normal lead-acid batteries is about 30%, and they self-discharge even when not in use. The need for charging comes out.

63 People who cannot get used to it cannot perform the charging operation at the proper time, and often cause overcharging or overdischarging. It is not easy for anyone to handle, and it is very inconvenient to use.

[0007]

69 Further, the conventional portable power supply device is also heavy because a lead storage battery is used, and has the same problems as the conventional jump starter from the viewpoint of portability and usability.

[0008]

75 The present invention has been made in view of the conventional circumstances as described above, and its purpose is to have a function as a jump starter, and also to provide an information device such as a battery-powered notebook PC and its ancillary devices, and a cigar. It has a function as a portable power supply that enables the use of in-vehicle electric devices that can be used by connecting to a socket, mobile phones, portable music players that

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can be powered by USB, etc., and also has an OBD (On-Board Diagnostic system).) The purpose is to provide a compact, lightweight, highly portable, and easy-to-use auxiliary power supply device for vehicles that functions as a portable power source for memory backup of vehicles compatible with the system.

[0009]

87 Yet another object of the present invention, the specific advantages obtained by the present invention, will be further clarified from the embodiments described below with reference to the drawings.

[0010]

93 The present invention is an auxiliary power supply device for a vehicle, and includes a housing, a DC input terminal including a DC jack installed on the side wall of the housing and a power supply cable for charging being externally connected via a DC plug. A charging circuit unit installed in the housing and internally connected to the DC input terminal, a lithium ion storage battery installed in the housing and internally connected to the charging circuit unit, and installed in the housing and described above. An output circuit unit internally connected to a lithium-ion storage battery, a control circuit unit installed in the housing and controlling the operation of the charging circuit unit and the output circuit unit, and an output circuit unit installed on the side wall of the housing. A first DC output terminal for jump start consisting of a jack that is internally connected to the unit and the booster cable is externally connected via a plug, and is installed on the side wall of the housing and internally connected to the output circuit unit. The PC power cable is installed on the front wall of the housing and internally connected to the output circuit section and the second DC output terminal for the PC power supply, which consists of a jack to which the PC power cable is externally connected via a plug. A third DC output terminal consisting of a USB socket to which the USB cable is externally connected via a USB plug, and an external power cable installed on the back wall of the housing and internally connected to the output circuit section. A fourth DC output terminal composed of a cigar socket externally connected via a cigar plug, a power switch installed on the front wall of the housing and internally connected to the control circuit unit, a jump start switch, and the above. It is installed on the front wall of the housing and is provided with a charge amount display unit which is controlled by the control circuit unit and displays the charge amount of the lithium ion storage battery as a level bar. The control circuit unit is the charge amount of the lithium ion storage battery. Is controlled so that the charge amount is displayed on the level bar by the charge amount display unit, and in the control circuit unit, the vehicle battery is externally connected to the first DC output terminal via the booster cable. By accepting the operation input of the jump start switch while the power switch is turned on, control is performed to supply power for jump start from the output circuit unit via the first DC output terminal. By accepting the operation input of the power switch in a state where the PC is externally connected to the second DC output terminal via the PC power cable,

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the PC is driven from the output circuit unit via the second DC output terminal. Controls to supply power for the above, and US to the above third DC output terminal By accepting the operation input of the power switch while the USB device is externally connected via the B cable, power for driving the USB device is supplied from the output circuit unit via the third DC output terminal. By performing control and receiving the operation input of the power switch in a state where the external device is externally connected to the fourth DC output terminal via the external power cable, the fourth DC output is output from the output circuit unit. It is characterized in that it controls to supply power for driving an external device via a terminal.

[0011]

134 In the dual-purpose auxiliary power supply device according to the vehicle of the present invention, power is supplied to the DC input terminal via the charging power cable provided with an AC adapter or a cigar socket at one end, and the control circuit unit is the DC input terminal. When a state in which power is supplied via the charging power cable is detected, the lithium ion storage battery is controlled to be charged via the charging circuit unit, and during charging control, the power supply from the output circuit unit to the outside is performed. Control may be performed to prohibit the supply.

[0012]

144 Further, in the dual-purpose auxiliary power supply device according to the vehicle of the present invention, the control circuit unit detects the power ON by the operation of the power switch, controls the operation of the charge amount display unit, and serves as a power lamp for displaying the power ON. The charge amount display unit is made to function, and in this power-on state, the jump start by a short-time operation of the jump start switch is detected and the jump start mode is controlled. In the control of the jump start mode, the first DC When the voltage of the in-vehicle battery of the automobile to be jump-started via the booster cable externally connected to the output terminal can be detected normally, the operation of the output circuit section is controlled and the lithium-ion storage battery is used as a power source for jump-start. The charge amount display unit is connected to the first DC output terminal via the output circuit unit, controls the operation of the charge amount display unit, and functions as a jump start lamp for displaying the jump start. can do.

[0013]

160 Further, in the dual-purpose auxiliary power supply device according to the vehicle of the present invention, the control circuit unit detects that the jump start switch has been operated for a long time in the power-on state and controls the charge boost mode, and controls the jump start. In the mode control, when the voltage of the in-vehicle battery of the

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automobile to be jump-started via the booster cable externally connected to the first DC output terminal can be detected normally, the operation of the output circuit unit is controlled. As a charge boost lamp that displays the charge boost by connecting the lithium ion storage battery as a power source for charge boost to the first DC output terminal via the output circuit unit and controlling the operation of the charge amount display unit. The charge amount display unit can be made to function.

[0014]

173 Further, in the dual-purpose auxiliary power supply device according to the vehicle of the present invention, the charge amount display unit is controlled by the control circuit unit and is arranged on a straight line that displays the charge amount of the lithium ion storage battery as the emission color changes. The control circuit unit is composed of a plurality of light emitting elements, and the control circuit unit is a power lamp for displaying the power ON by lighting one of the plurality of light emitting elements with a first light emitting color. By functioning and lighting the other one of the plurality of light emitting elements with the second light emitting color, the charge amount is used as a jump start lamp for displaying the jump start or a charge boost lamp for displaying the charge boost. The display unit can be made to function.

[0015]

186 Further, in the dual-purpose auxiliary power supply device according to the vehicle of the present invention, the vehicle's OBD (On-Board Diagnostic system) system is externally connected as an external device via the external power cable to the fourth DC output terminal. When the control circuit unit receives the operation input of the power switch, the output circuit unit supplies power for memory backup of the OBD as a power source for driving an external device via the fourth DC output terminal. Can be.

[0016]

195 Further, the dual-purpose auxiliary power supply device according to the vehicle of the present invention may include a plurality of rechargeable lithium ion batteries installed in the housing as the lithium ion storage battery.

[0017]

201 Further, the dual-purpose auxiliary power supply device according to the vehicle of the present invention functions as a jump starter having a weight of about 830 g and a capacity of 12 V / 4.5 Ah by mounting three 3.6 V rechargeable lithium ions in the housing. Can be made to.

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[0018]

208 Further, the dual-purpose auxiliary power supply device according to the vehicle of the present invention is to function as a jump starter having a weight of about 1300 g and a capacity of 12 V / 9 Ah by mounting six 3.6 V rechargeable lithium ions in the housing. Can be.

[0019]

215 According to the present invention, an information device such as a battery-powered notebook PC and its ancillary devices, an in-vehicle compatible electric device that can be used by connecting to a cigar socket, a mobile phone, etc. It has a function as a portable power supply that enables the use of portable music players that can be powered by USB, and also has a small size that functions as a portable power supply for memory backup of vehicles compatible with the OBD (On-Board Diagnostic system) system. It is possible to provide an auxiliary power supply device for a vehicle that is lightweight, has excellent portability, and is easy to use.

[0020]

226 It is an external perspective view of the auxiliary power supply device for a vehicle to which the present invention is applied, viewed from diagonally above the front left side.

228 It is an external perspective view of the auxiliary power supply device for a vehicle seen from the front side diagonally upper right.

230 It is a block diagram which shows the electrical connection state of the component of the auxiliary power supply device for a vehicle.

232 It is a top view which shows the power supply cable for charging connected to the DC input terminal of the auxiliary power supply device for a vehicle, (A) shows an AC adapter cable, and (B) shows a cigar plug cable.

235 It is an external perspective view which shows the auxiliary power supply device for a vehicle in the state which the AC adapter is connected to the DC input terminal.

237 It is a front view of the charge amount display part of the said vehicle auxiliary power supply device which shows the bar display state of the charge level.

239 It is a top view which shows the booster cable connected to the 1st DC output terminal of the said vehicle auxiliary power supply device.

241 FIG. 5 is an external perspective view showing the auxiliary power supply device for a vehicle in a state where an in-vehicle battery of an automobile to be jump-started via a booster cable is connected to the first DC output terminal.

244 It is an external perspective view which shows the said auxiliary power supply device for a vehicle in the state which the USB device is connected to the 3rd DC output terminal via a USB cable.

247 It is a top view which shows the cigar plug cable connected to the 4th DC output terminal of

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the said vehicle auxiliary power supply device, (A) shows the 1st cigar plug cable which has a DC plug at one end, (B) is A second cigar plug cable provided in the OBD2 connector is shown at one end.

251 It is external perspective view of the said vehicle auxiliary power supply device which shows the lighting state of the side illumination lamp provided on the side wall of the said vehicle auxiliary power supply device.

[0021]

257 Hereinafter, embodiments of the present invention will be described in detail with reference to the drawings.

259 Needless to say, the present invention is not limited to the following embodiments, and various changes can be made without departing from the gist of the present invention.

[0022]

264 1 and 2 show an external perspective view of the vehicle auxiliary power feeding device 100 to which the present invention is applied, as viewed from diagonally above the front left and diagonally above the front right.

267 Further, it is shown in the block diagram of FIG. 3 which shows the electric connection state of the component of the auxiliary power supply device 100 for a vehicle.

[0023]

272 The vehicle auxiliary power supply device 100 includes a thin box-shaped housing 10 as shown in the external perspective views of FIGS. 1 and 2, and is inside the housing 10 as shown in the block diagram of FIG. It includes an installed charging circuit unit 1, a lithium ion storage battery 2, an output circuit unit 3, and a control circuit unit 4.

[0024]

279 Then, in the vehicle auxiliary power supply device 100, as shown in the external perspective view of FIG. 1, a DC input terminal 20 for receiving a power supply of, for example, 12 V from a household power source or an automobile battery is provided on the left side wall of the housing 10. It is installed in 11.

[0025]

286 The DC input terminal 20 includes a DC jack to which a power supply cable for charging is externally connected via a DC plug, as will be described later.

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[0026]

291 As shown in the block diagram of FIG. 3, the charging circuit unit 1 is internally connected to the DC input terminal 20.

293 The lithium ion storage battery 2 is internally connected to the charging circuit unit 1.

294 Further, the output circuit unit 3 is internally connected to the lithium ion storage battery 2.

295 Further, the control circuit unit 4 is internally connected to the charging circuit unit 1 and the output circuit unit 3.

[0027]

300 Further, as shown in the block diagram of FIG. 3, the vehicle auxiliary power supply device 100 includes a first DC output terminal 31 for jump start and a second for PC power supply, which are internally connected to the output circuit unit 3. It includes a DC output terminal 32, a third DC output terminal 33 for a USB power supply, and a fourth DC output terminal 34 for a memory backup power supply.

[0028]

308 The first DC output terminal 31 includes a jack to which a booster cable is externally connected via a plug, as will be described later.

[0029]

313 The second DC output terminal 32 includes a jack to which a PC power cable is externally connected via a plug, as will be described later.

[0030]

318 The third DC output terminal 33 includes a USB socket to which a USB cable is externally connected via a USB plug, as will be described later.

[0031]

323 The fourth DC output terminal 34 includes a cigar socket to which an external power cable is externally connected via a cigar plug, as will be described later.

[0032]

328 The first DC output terminal 31 for the jump start and the second DC output terminal 32 for the PC power supply are installed on the right side wall 12 of the housing 10 as shown in the external perspective view of FIG. There is.

331 Further, as shown in the external perspective view of FIG. 1, the third DC output terminal 33

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for the USB power supply is installed on the front wall 13 of the housing 10, and the fourth DC output terminal 33 for the memory backup power supply is installed. The DC output terminal 34 is installed on the left side wall 11 of the housing 10.

[0033]

338 Further, as shown in the block diagram of FIG. 3, the vehicle auxiliary power supply device 100 includes a power switch 41, a jump start switch 42, a light select switch 43, and a side light on / internally connected to the control circuit unit 4. It includes an off switch 44.

341 The power switch 41, the jump start switch 42, the light select switch 43, and the side light on / off switch 44 are installed on the front wall 13 of the housing 10 as shown in the external perspective view of FIG. ..

[0034]

347 Further, as shown in the block diagram of FIG. 3, the vehicle auxiliary power supply device 100 includes a charge amount display unit 51 internally connected to the control circuit unit 4, a battery low indicator light 52, and a pair of emergency warning lights 53A. , 53B and a pair of side illumination lights 54A, 54B.

[0035]

354 The charge amount display unit 51 and the pair of emergency warning lights 53A and 53B are installed on the front wall 13 of the housing 10 as shown in the external perspective view of FIG.

[0036]

360 The charge amount display unit 51 is composed of a plurality of LEDs having different emission colors (in this embodiment, four colors of red, orange, yellow, and green) arranged linearly.

363 The charge amount display unit 51 is controlled by the control circuit unit 4 and not only functions as a bar display of the charge amount, but also functions as a power lamp when lit in green and as a jump start lamp when lit in yellow. do.

366 Further, the pair of emergency warning lights 53A and 53B are composed of a red LED and a white LED, are controlled by the control circuit unit, and function as an emergency warning light by blinking alternately.

[0037]

372 Further, the battery low indicator lamp 52 is installed on the right side wall 12 of the housing 10 as shown in the external perspective view of FIG.

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[0038]

377 The battery low indicator lamp 52 is composed of a red LED, is controlled by the control circuit unit 4, and becomes a blinking state or a lighting state when the voltage of the lithium ion storage battery 2 drops to a predetermined value. Functions as.

[0039]

383 Further, as shown in the external perspective views of the pair of side lighting lamps 54A and 54B, FIGS. 1 and 2, they are installed on the left side wall 11 and the right side wall 12 of the housing 10.

[0040]

389 The pair of side illumination lamps 54A and 54B are each composed of a plurality of white LEDs arranged in a straight line.

[0041]

394 In the vehicle auxiliary power supply device 100 having such a configuration, the control circuit unit 4 installed in the housing 10 performs the operation of the charge control unit and the output circuit unit 1 that control the operation of the charge circuit unit 1. It consists of a microcomputer that functions as a display control unit that controls the operation of the output control unit to be controlled, the charge amount display unit 5151, etc., and controls the operations of the internally connected charging circuit unit 1 and output circuit unit 3 as follows. do.

[0042]

404 Here, as the charging power supply cable connected to the vehicle auxiliary power supply device 100, as shown in FIGS. 4A and 4B, a 12V power supply for charging is supplied from the household power supply. AC adapter cable 110A and cigar plug cable 110B for supplying power supply of, for example, 12V from an automobile battery are prepared.

[0043]

411 The AC adapter cable 110A shown in FIG. 4A is provided with an AC adapter 111A for supplying 12V power for charging from a household power source at one end, and a DC plug 112 is attached to a DC input terminal 20 composed of the DC jack. Externally connected via.

414 Further, the cigar plug cable 110B shown in FIG. 4B is provided with a cigar plug 111B for supplying a power supply of, for example, 12V from an automobile battery at one end, and a

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DC plug 112 is provided at a DC input terminal 20 composed of the DC jack. It is connected externally via.

[0044]

421 Then, in the control circuit unit 4 of the vehicle auxiliary power supply device 100, as shown in FIG. 5, the AC adapter cable 110A or the cigar plug cable 110B is externally connected to the DC input terminal 20, and the household power supply or the automobile battery is connected. When it is detected that a voltage equal to or higher than a predetermined voltage value is applied to the DC input terminal 20 by supplying power for charging from, the charging mode is controlled.

[0045]

430 In the control of the charging mode, the control circuit unit 4 controls the operation of the charging circuit unit 1 by the charging control unit, charges the lithium ion storage battery 2 via the charging circuit unit 1, and charges the lithium ion storage battery 2. When the storage battery 2 is fully charged, the overcharge protection circuit is activated and charging is completed.

[0046]

438 Further, the control circuit unit 4 controls the operation of the output circuit unit 3 by the output control unit during charge control, and prohibits the power supply from the output circuit unit 3 to the outside.

[0047]

444 Further, during charge control, the control circuit unit 4 controls the operation of the charge amount display unit 51 by the display control unit, controls the charge amount display unit 51, and displays the charge amount as a bar.

[0048]

450 The operation of the charge amount display unit 51 is controlled by the control circuit unit 4, and as shown in FIG. 6, the charge amount display unit 51 starts from an uncharged state, a red dot state indicating a battery remaining amount of 20% or less, and a battery remaining amount of 20%. Lights red to indicate 30%, blinks orange to indicate 30% to 40% remaining battery power, lights yellow to indicate 40% to 70% remaining battery power, and lights green to indicate 70% to 100% remaining battery power. As the charging progresses to the fully charged state, the lighting state changes sequentially.

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[0049]

460 The vehicle auxiliary power supply device 100 functions as a portable jump starter in a state where the lithium ion storage battery 2 is charged, and can also be used as a portable power supply device for using electrical equipment outdoors.

[0050]

466 Here, as shown in FIG. 7, the vehicle auxiliary power supply device 100 is provided with connection clips 121A and 121B for gripping the electrode terminals of the vehicle-mounted battery at one ends of the two cables, and is the first jump start device. A booster cable 120 for jump start, which is externally connected to the jack constituting the DC output terminal 31 of the above via the plug 122, is prepared.

[0051]

474 Then, the vehicle auxiliary power supply device 100 is used as a jump starter as follows.

[0052]

478 That is, when the vehicle auxiliary power supply device 100 is used as a jump starter, the booster cable 120 for the jump start is used with the power switch 41 of the vehicle auxiliary power supply device 100 turned off, as shown in FIG. It is connected to the first DC output terminal 31 by the user.

[0053]

485 The user of the vehicle auxiliary power supply device 100 can confirm that the power switch 41 is in the OFF state by turning off all of the plurality of LEDs constituting the charge amount display unit 51. ..

[0054]

491 Next, when the user presses the power switch 41 to turn on the power, the control circuit unit 4 of the vehicle auxiliary power supply device 100 detects the power ON and controls the operation of the charge amount display unit 51 by the display control unit. , The charge amount display unit 51 is set to the green lighting state.

495 The charge amount display unit 51 functions as a power lamp that indicates that the power is turned on by lighting in green.

[0055]

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500 Then, when the user presses the jump start switch 42 in this power-on state to jump start, the control circuit unit 4 of the vehicle auxiliary power supply device 100 detects the jump start due to the short-time operation of the jump start switch 42. Controls the jump start mode.

[0056]

506 In the control of the jump start mode, the control circuit unit 4 can normally detect the voltage of the vehicle-mounted battery 200 of the automobile to be jump-started to the first DC output terminal 31 for jump start via the booster cable 120. In this case, the output control unit controls the operation of the output circuit unit 3, and the lithium ion storage battery 2 is used as a power source for the jump start, and the first DC output terminal 31 for the jump start is passed through the output circuit unit 3. The operation of the charge amount display unit 51 is controlled by the display control unit, and the charge amount display unit 51 is turned on in yellow.

514 The charge amount display unit 51 functions as a jump start lamp that displays a jump start by lighting yellow.

516 In this jump start mode, the charge amount display unit 51 displays the power ON by lighting green and the jump start by lighting yellow.

[0057]

521 In this jump start mode, the user can perform a jump start to start the engine of the automobile equipped with the vehicle-mounted battery 200 to which the vehicle auxiliary power supply device 100 is connected.

[0058]

527 Here, a jump starter having a capacity of about 12 V / 4.5 Ah using a conventional general lead storage battery has a main body weight of about 5 kg to 7 kg, and can be started about 5 times on average in a fully charged state. On the other hand, the auxiliary power supply device 100 for a vehicle to which the present invention is applied is, for example, a rechargeable type of 3.6 V in a housing 10 having a size of 45 mm × 190 mm × 120 mm (height × width × depth). By mounting three lithium ions in series, it functions as a portable jump starter with a capacity of 12V / 4.5Ah, which weighs about 830g and is compatible with gasoline passenger cars up to 3000cc. The number of times that the battery can be started in the rechargeable state has also improved to about 10 to 20 times.

[0059]

539 Further, in the auxiliary power supply device 100 for a vehicle, for example, a housing 10 having a size of 45 mm × 190 mm × 160 mm (height × width × depth) is used, and six rechargeable lithium ions that are doubled are mounted. As a result, it functions as a portable

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jump starter with a capacity of 12V / 9Ah, which weighs about 1300g and is compatible with all gasoline passenger cars and diesel vehicles up to 3000cc 4-cylinder.

[0060]

547 Further, the control circuit unit 4 in the vehicle auxiliary power supply device 100 enters the charge boost mode control state when the user operates the jump start switch 42 for a long time, that is, for example, for 5 seconds or longer in the power ON state. The operation of the output circuit unit 3 is controlled by the output control unit so that the electricity charged in the lithium ion storage battery 2 is discharged at one time.

552 In the control state of the charge boost mode, the operation of the charge amount display unit 51 is controlled by the display control unit, and the charge amount display unit 51 is turned on in yellow.

555 That is, the charge amount display unit 51 functions as a charge boost mode that displays the charge boost mode by lighting yellow.

557 This charge boost mode is used when the vehicle-mounted battery is in a deep discharge state.

[0061]

562 Further, as described above, the auxiliary power supply device 100 for a vehicle has a capacity of 12 V / 4.5 Ah and a weight of about 830 g, and even a device having a capacity of 12 V / 9 Ah has a weight of about 1300 g and is small and lightweight, so that it is portable. In addition to the first DC output terminal 31 for jump start, the second to fourth DC output terminals 32 to 34 for external connection for using electrical equipment outdoors are provided. Therefore, it can be used as a portable power supply as follows.

[0062]

571 That is, in the vehicle auxiliary power supply device 100, a PC can be externally connected to the second DC output terminal 32 via a PC power cable.

[0063]

576 In the control circuit unit 4 of the vehicle auxiliary power supply device 100, a PC power cable is externally connected to the jack via the plug to form the second DC output terminal 32, and the PC power cable is connected to the jack via the PC power cable. When the user presses the power switch 41 to turn on the power while the PC is externally connected, the power ON is detected and the operation of the charge amount display unit 51 is controlled by the display control unit, and the charge amount display unit 51 is displayed. The power ON is displayed as a green lighting state, and the operation of the output circuit unit 3 is controlled by the output control unit, and the power supply for driving the PC of DC19V is

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supplied from the second DC output terminal 32 via the PC power cable. And supply it to the PC.

[0064]

589 Further, in the vehicle auxiliary power supply device 100, an electronic device such as a portable music player capable of supplying power by USB (Universal Serial Bus) is connected to the third DC output terminal 33 via a commercially available USB cable. Can be done.

[0065]

595 As shown in FIG. 9, the control circuit unit 4 in the vehicle auxiliary power supply device 100 constitutes the third DC output terminal 33, and the USB cable 130 is externally connected to the USB jack via the USB plug. Then, when the user presses the power switch 41 to turn on the power while the USB device 300 is externally connected via the USB power cable 130, the power ON is detected and the charge amount display unit 51 is subjected to the display control unit. The operation is controlled, the charge amount display unit 51 is lit in green to display the power ON, and the output control unit controls the operation of the output circuit unit 3 to supply the power supply for USB drive of DC5V. It is supplied from the DC output terminal 33 of No. 3 to the USB device 300 via the USB power cable 130.

[0066]

607 Further, the vehicle auxiliary power supply device 100 has two types of cigar plug cables externally connected to the fourth DC output terminal 34 made of a cigar socket, as shown in FIGS. 10A and 10B. Cigar plug cable is prepared.

[0067]

613 The first cigar plug cable 140A shown in FIG. 10A is compatible with vehicles that can be used by connecting to a DC12V / 24V in-vehicle power socket, a so-called cigar socket, which is installed as standard in the vehicle. A cable for connecting an electric device, which is provided with a DC plug 141A connected to an in-vehicle compatible electric device at one end, and is externally connected to the fourth DC output terminal 34 via a cigar plug 142.

[0068]

621 The second cigar plug cable 140B shown in FIG. 10B is a vehicle memory back cable compatible with an OBD (On-Board Diagnostic system) system, and is provided with an OBD2 connector 141B at one end and is a cigar plug. It is externally connected to the fourth DC output terminal 34 via 142.

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[0069]

628 In the control circuit unit 4 of the vehicle auxiliary power supply device 100, the first cigar plug cable 140A or the second cigar plug cable 140B is attached to the cigar socket to form the fourth DC output terminal 34. When the user presses the power switch 41 to turn on the power while the external device is externally connected via the cigar plug cable and is externally connected via 142, the power ON is detected by the display control unit. The operation of the charge amount display unit 51 is controlled, the charge amount display unit 51 is lit in green to display the power ON, and the output control unit controls the operation of the output circuit unit 3 to control the operation of the output circuit unit 3 to be an external device of DC12V. Power for driving is supplied from the fourth DC output terminal 32 to an external device via a cigar plug cable.

[0070]

641 That is, the vehicle auxiliary power supply device 100 functions as a portable power source for driving an in-vehicle compatible electric device via a first cigar gable 140A externally connected to the fourth DC output terminal 34.

[0071]

647 Further, the vehicle auxiliary power supply device 100 is for memory backup of a vehicle compatible with an OBD (On-Board Diagnostic system) system via a second cigar gable 140A externally connected to the fourth DC output terminal 34. Functions as a portable power supply for.

[0072]

654 Here, the OBD (On-Board Diagnostic system) system is a self-fault diagnosis function performed by a computer mounted on an automobile, and facilitates a functional inspection of an exhaust gas purification device of an automobile in the process of use.

657 In OBD2, the inspection connector, communication protocol, failure diagnosis code, and the like are standardized.

[0073]

662 In vehicles equipped with an OBD (On-Board Diagnostic system) system, various diagnostic history information is stored in the memory so that the information in the memory will not be lost when the on-board battery is replaced. It is necessary to supply backup power.

[0074]

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668 That is, the vehicle auxiliary power supply device 100 has a function as a jump starter, and can be used by connecting to an information device such as a battery-powered notebook PC or ancillary devices thereof, or a cigar socket. It has a function as a portable power source that enables the use of devices, mobile phones, portable music players that can be powered by USB, etc., and is also portable for vehicle memory backup compatible with the OBD (On-Board Diagnostic system) system. It is a compact, lightweight, highly portable auxiliary power supply device that functions as a power source and is easy to use.

[0075]

678 Further, the vehicle auxiliary power supply device 100 not only functions as a jump starter or a portable power source as described above, but also functions as a warning indicator light or an illumination light used in an emergency.

[0076]

684 That is, the control circuit unit 4 in the vehicle auxiliary power supply device 100 detects that the light select switch 43 is pressed while the power is on, and the display control unit displays the charge amount display unit 51 and a pair of emergency units. The warning lights 53A and 53B are controlled as follows.

[0077]

691 When the control circuit unit 4 detects that the light select switch 43 is pressed once, the red LED provided as the emergency warning light 53A is turned on as an emergency light, and the light select switch 43 is turned on twice. When it is detected that it has been pressed, the white LED provided as the emergency warning light 53B is turned on to function as a front light, and when it is detected that the light select switch 43 has been pressed three times, the pair of emergency lamps The warning lights 53A and 53B are blinked alternately, that is, red and white alternately, and when it is detected that the light select switch 43 is pressed four times, the pair of emergency warning lights 53A and 53B are turned off.

699 When the control circuit unit 4 detects that the light select switch 43 has been pressed and held for 3 seconds or longer, the control circuit unit 4 drives the charge amount display unit 51 to turn on the light according to the charge amount of the battery.

[0078]

705 Further, the control circuit unit 4 controls the operation of the pair of side illumination lamps 54A and 54B by the display control unit in response to the pressing operation of the side light on / off switch 44, and the side light on / off. -When it is detected that the switch 44 is pressed, as shown in FIG. 11, the pair of side illumination lamps 54A and 54B are turned on, and it is detected that the side light on / off switch 44 is pressed again. Then, the pair of side

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illumination lamps 54A and 54B are turned off.

[0079]

714 Further, the control circuit unit 4 constantly monitors the battery voltage of the lithium ion storage battery 2, and when the battery voltage drops to 8.2 V, the battery low indicator lamp 52 is turned on to be in an over-discharged state. It has a function to warn that.

[0080]

720 1 Charging circuit, 2 Lithium-ion battery, 3 Output circuit, 4 Control circuit, 10 Housing, 11 Left side wall, 12 Right side wall, 13 Front wall, 20 DC input terminal, 31 First DC output terminal, 32 2nd DC output terminal, 33 3rd DC output terminal, 34 4th DC output terminal, 41 power switch, 42 jump start switch, 43 light select switch, 44 side light on / off switch, 51 charge amount Display, 52 battery low indicator, 53A, 53B emergency warning light, 54A, 54B side lighting, 100 vehicle auxiliary power supply, 110A AC adapter cable, 110B cigar plug cable, 111A AC adapter, 112 DC plug, 111B Cigar plug, 121A, 121B connection clip, 122 plug, 120 booster cable, 130 USB cable, 140A first cigar plug cable, 140B second cigar plug cable, 141A DC plug, 141B OBD2 connector, 142 cigar plug, 200 in-vehicle Battery, 300 USB device

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CLAIMS JP3182855U

1.

13 A DC input terminal consisting of a housing and a DC jack installed on the side wall of the housing and to which a power supply cable for charging is externally connected via a DC plug, and a DC input terminal installed in the housing and inside the DC input terminal. A connected charging circuit unit, a lithium ion storage battery installed in the housing and internally connected to the charging circuit unit, and an output circuit unit installed in the housing and internally connected to the lithium ion storage battery. A control circuit unit installed in the housing and controlling the operation of the charging circuit unit and the output circuit unit, and an internal connection to the output circuit unit installed on the side wall of the housing, and a booster cable plugs the plug. A first DC output terminal for jump start consisting of a jack connected externally via a jack, installed on the side wall of the housing, internally connected to the output circuit section, and a PC power cable externally connected via a plug. It is installed on the front wall of the housing and internally connected to the output circuit section with a second DC output terminal for PC power supply consisting of a jack to be connected, and the USB cable is externally connected via a USB plug. From a cigar socket that is installed on the back wall of the housing and is internally connected to the output circuit section, and the external power cable is externally connected via a cigar plug. A fourth DC output terminal, a power switch and a jump start switch installed on the front wall of the housing and internally connected to the control circuit unit, and a control circuit unit installed on the front wall of the housing. The control circuit unit monitors the charge amount of the lithium ion storage battery and displays the charge amount on the charge amount display unit. In addition to controlling the level bar display, the control circuit unit jump-starts with the vehicle battery externally connected to the first DC output terminal via a booster cable and the power switch turned on. By accepting the operation input of the switch, control is performed to supply power for jump start from the output circuit unit via the first DC output terminal, and to the second DC output terminal via a PC power cable. By accepting the operation input

of the power switch while the PC is externally connected, control is performed to supply power for driving the PC from the output circuit unit via the second DC output terminal, and the third A USB device is externally connected to the DC output terminal via a USB cable. In this state, by accepting the operation input of the power switch, the output circuit unit controls to supply the power for driving the USB device via the third DC output terminal, and the fourth DC output. By accepting the operation input of the power switch while the external device is externally connected to the terminal via the external power cable, the power supply for driving the external device from the output circuit unit via the fourth DC output terminal. Auxiliary power supply device for vehicles, which is characterized by controlling the supply of power.

2.

51 The DC input terminal is supplied with power via the charging power supply cable provided with an AC adapter or a cigar socket at one end, and the control circuit unit supplies power to the DC input terminal via the charging power supply cable. When the detected state is detected, the lithium ion storage battery is controlled to be charged via the charging circuit unit, and during the charging control, the power supply from the output circuit unit to the outside is prohibited. The vehicle auxiliary power supply device according to claim 1.

3.

60 The control circuit unit detects the power ON by operating the power switch, controls the operation of the charge amount display unit, causes the charge amount display unit to function as a power lamp for displaying the power ON, and is in this power ON state. Detects the jump start by operating the jump start switch for a short time and controls the jump start mode, and in the control of this jump start mode, jumps via the booster cable externally connected to the first DC output terminal. When the voltage of the in-vehicle battery of the automobile to be started can be detected normally, the operation of the output circuit unit is controlled, and the lithium ion storage battery is used as a power source for jump start via the output circuit unit to the first DC. Either claim 1 or 2, characterized in that the charge amount display unit functions as a jump start lamp for displaying a jump start by connecting to an output terminal and controlling the operation of the charge amount display unit. The vehicle auxiliary power supply device according to item 1.

4.

75 The control circuit unit detects that the jump start switch has been operated for a long time in the power-on state and controls the charge boost mode. In the control of the jump start mode, the control circuit unit is connected to the first DC output terminal. When the voltage of the in-vehicle battery of the automobile to be jump-started via the externally connected booster cable can be detected normally, the operation of the output circuit unit is controlled, and the lithium

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ion storage battery is used as the power source for charge boost. It is characterized in that it is connected to the first DC output terminal via a circuit unit, controls the operation of the charge amount display unit, and functions as the charge boost lamp for displaying the charge boost. The vehicle auxiliary power supply device according to claim 3.

5.

87 The charge amount display unit is composed of a plurality of light emitting elements arranged on a straight line that is controlled by the control circuit unit and displays the charge amount of the lithium ion storage battery with a change in emission color on a level bar. By lighting one of the plurality of light emitting elements with the first light emitting color, the charge amount display unit functions as a power lamp for displaying the power ON, and the other of the plurality of light emitting elements 4. The charge amount display unit functions as a jump start lamp for displaying the jump start or a charge boost lamp for displaying the charge boost by lighting one of them with a second emission color. Auxiliary power supply device for vehicles described.

6.

99 The control circuit unit accepts the operation input of the power switch while the vehicle's OBD (On-Board Diagnostic system) system is externally connected to the fourth DC output terminal as an external device via the external power cable. As a result, any one of claims 1 to 5, wherein power is supplied from the output circuit unit via the fourth DC output terminal as a power source for driving an external device for memory backup of the OBD. The vehicle auxiliary power supply device according to item 1.

7.

108 The auxiliary power supply device for a vehicle according to claim 7, wherein the lithium ion storage battery includes a plurality of rechargeable lithium ion batteries installed in the housing.

8.

114 The vehicle according to claim 7, wherein by mounting three 3.6 V rechargeable lithium ions in the housing, the vehicle functions as a jump starter having a weight of about 830 g and a capacity of 12 V / 4.5 Ah. Auxiliary power supply device for.

9.

120 The vehicle auxiliary according to claim 7, wherein six 3.6V rechargeable lithium ions are mounted in the housing to function as a jump starter having a weight of about 1300 g and a

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capacity of 12 V / 9 Ah. Power supply device.

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【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

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、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、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にある。

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【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人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

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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】

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【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。

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【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

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れて、上記リチウムイオン蓄電池２の電圧が所定値まで低下すると点滅状態あるいは点灯状態となることにより、バッテリロー表示灯として機能する。

【００３９】

また、上記一対の側面照明灯５４Ａ，５４Ｂ、図１及び図２の外観斜視図に示すように、上記筐体１０の左側面壁１１と右側面壁１２に設置されている。

【００４０】

上記一対の側面照明灯５４Ａ，５４Ｂは、それぞれ直線状に配置された複数の白色ＬＥＤにより構成されている。

【００４１】

このような構成の車両用補助給電装置１００において、上記筐体１０内に設置された制御回路部４は、上記充電回路部１の動作を制御する充電制御部、上記出力回路部１の動作を制御する出力制御部、充電量表示部５１５１等の動作を制御する表示制御部として機能するマイクロコンピュータからなり、内部接続された上記充電回路部１及び出力回路部３の動作を次のように制御する。

【００４２】

ここで、この車両用補助給電装置１００に接続される充電用の給電ケーブルとしては、図４の（Ａ），（Ｂ）に示すように、家庭用電源から充電用の１２Ｖの電源供給するためのＡＣアダプタケーブル１１０Ａと、自動車バッテリから例えば１２Ｖの電源供給を供給するためのシガープラグケーブル１１０Ｂが準備されている。

【００４３】

図４の（Ａ）に示すＡＣアダプタケーブル１１０Ａは、家庭用電源から充電用の１２Ｖの電源供給するためのＡＣアダプタ１１１Ａを一端に備え、上記ＤＣジャックからなるＤＣ入力端子２０にＤＣプラグ１１２を介して外部接続される。また、図４の（Ｂ）に示すシガープラグケーブル１１０Ｂは、自動車バッテリから例えば１２Ｖの電源供給を供給するためのシガープラグ１１１Ｂを一端に備え、上記ＤＣジャックからなるＤＣ入力端子２０にＤＣプラグ１１２を介して外部接続される。

【００４４】

そして、上記車両用補助給電装置１００における上記制御回路部４は、図５に示すように、上記ＤＣ入力端子２０にＡＣアダプタケーブル１１０Ａ又はシガープラグケーブル１１０Ｂが外部接続され、家庭用電源又は自動車バッテリから充電用の電源が供給されることにより、上記ＤＣ入力端子２０に所定電圧値以上の電圧が印加されたことを検出すると、充電モードの制御を行う。

【００４５】

この充電モードの制御において、上記制御回路部４は、充電制御部により上記充電回路部１の動作を制御して、上記充電回路部１を介して上記リチウムイオン蓄電池２を充電し、上記リチウムイオン蓄電池２が満充電まで充電されると過充電保護回路を機能させ、充電を終了する。

【００４６】

また、上記制御回路部４は、充電制御中には、出力制御部により上記出力回路部３の動作を制御して、上記出力回路部３から外部への電源供給を禁止する。

【００４７】

さらに、上記制御回路部４は、充電制御中には、表示制御部により上記充電量表示部５１の動作を制御して、上記充電量表示部５１を制御して充電量をバー表示する。

【００４８】

上記充電量表示部５１は、上記制御回路部４により動作が制御されて、図６に示すように、未充電状態から、バッテリ残量２０％以下を示す赤色点状態、バッテリ残量２０％から３０％を示す赤色点灯、バッテリ残量３０％から４０％を示す橙色点滅状態、バッテリ残量４０％から７０％を示す黄色点灯状態、バッテリ残量７０％から１００％を示す緑色点灯状態へと、満充電状態まで充電が進むに従って、点灯状態が順次変化する。

【００４９】

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上記車両用補助給電装置１００は、上記リチウムイオン蓄電池２を充電した状態で、可搬型ジャンプスータとして機能し、また、屋外で電気機器を使用するためにポータブル電源装置として使用することができる。

【００５０】

ここで、この車両用補助給電装置１００には、図７に示すように、車載バッテリの電極端子を掴む接続クリップ１２１Ａ、１２１Ｂが２本のケーブルの一端に設けられ、上記ジャンプスタート用の第１のＤＣ出力端子３１を構成しているジャックにプラグ１２２を介して外部接続されるジャンプスタート用のブースタケーブル１２０が準備されている。

【００５１】

そして、この車両用補助給電装置１００は、次のようにしてジャンプスータとして使用される。

【００５２】

すなわち、この車両用補助給電装置１００をジャンプスータとして使用する場合、当該車両用補助給電装置１００の電源スイッチ４１がＯＦＦの状態で、図８に示すように、上記ジャンプスタート用のブースタケーブル１２０がユーザにより上記第１のＤＣ出力端子３１に接続される。

【００５３】

上記車両用補助給電装置１００のユーザは、上記充電量表示部５１を構成している複数のＬＥＤが全て消灯していることで、電源スイッチ４１がＯＦＦの状態であることを確認することができる。

【００５４】

次に、ユーザが電源スイッチ４１を押して電源ＯＮにすると、この車両用補助給電装置１００の制御回路部４は、電源ＯＮを検知して上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を緑色点灯状態とする。上記充電量表示部５１は、緑色点灯により電源ＯＮを表示するパワーランプとして機能する。

【００５５】

そして、この電源ＯＮ状態でユーザがジャンプスタートスイッチ４２を押してジャンプスタートすると、この車両用補助給電装置１００の制御回路部４は、上記ジャンプスタートスイッチ４２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う。

【００５６】

このジャンプスタートモードの制御において、上記制御回路部４は、上記ジャンプスタート用の第１のＤＣ出力端子３１にブースタケーブル１２０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２００の電圧を正常に検知できた場合に、上記出力制御部により出力回路部３の動作を制御し、上記リチウムイオン蓄電池２をジャンプスタート用の電源として上記出力回路部３を介して上記ジャンプスタート用の第１のＤＣ出力端子３１に接続するとともに、上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を黄色点灯状態とする。上記充電量表示部５１は、黄色点灯により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機能する。このジャンプスタートモードでは、上記充電量表示部５１は、緑色点灯により電源ＯＮを表示するとともに黄色点灯によりジャンプスタートを表示している。

【００５７】

このジャンプスタートモードの状態で、ユーザは、この車両用補助給電装置１００が接続されている上記車載バッテリ２００を搭載した自動車のエンジンを始動させるジャンプスタートを行うことができる。

【００５８】

ここで、従来の一般的な鉛蓄電池を用いた１２Ｖ／４．５Ａｈ程度の容量のジャンプスータは、本体重量が５ｋｇ～７ｋｇ程度あり、満充電電状態での始動可能回数は平均５回程度であったのに対し、本考案を適用した上記車両用補助給電装置１００は、例えば４５ｍｍ×１９０ｍｍ×１２０ｍｍ（高さ×幅×奥行き）の大きさの筐体１０内に例えば３

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．６Ｖの充電式リチウムイオンを３個直列接続して実装することにより、重さ８３０ｇ程度で３０００ｃｃまでのガソリン乗用車に対応する１２Ｖ／４．５Ａｈの容量の可搬型ジャンプスタータとして機能し、小型軽量で、しかも、満充電電状態での始動可能回数も１０～２０回程度に向上している。

【００５９】

また、上記車両用補助給電装置１００は、例えば４５ｍｍ×１９０ｍｍ×１６０ｍｍ（高さ×幅×奥行き）の大きさの筐体１０を用いて、２倍の６個の充電式リチウムイオンを実装することにより、重さ１３００ｇ程度でガソリン乗用車全般及び３０００ｃｃ４気筒までのディーゼル車に対応する１２Ｖ／９Ａｈの容量の可搬型ジャンプスタータとして機能する。

【００６０】

また、この車両用補助給電装置１００における上記制御回路部４は、上記電源ＯＮ状態でユーザがジャンプスタートスイッチ４２を長時間操作すなわち例えば５秒以上長押しすると、チャージブーストモードの制御状態となり、上記リチウムイオン蓄電池２に充電されている電気を１度に放出するように、上記出力制御部により上記出力回路部３の動作を制御する。このチャージブーストモードの制御状態では、上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を黄色点灯状態とする。すなわち、上記充電量表示部５１は、黄色点灯によりチャージブーストモードを表示するチャージブーストモードとして機能する。このチャージブーストモードは、車載バッテリが深放電状状態になっている場合に使用される。

【００６１】

また、この車両用補助給電装置１００は、上述の如く１２Ｖ／４．５Ａｈの容量のもので重さ８３０ｇ程度、１２Ｖ／９Ａｈの容量のものでも１３００ｇ程度の重量で小型軽量であるので、可搬性に優れ、しかも、上記ジャンプスタート用の第１のＤＣ出力端子３１の他に、屋外で電気機器を使用するための外部接続用の第２乃至第４のＤＣ出力端子３２～３４を備えているので、次のようにポータブル電源として使用することができる。

【００６２】

すなわち、この車両用補助給電装置１００において、上記第２のＤＣ出力端子３２には、ＰＣ電源ケーブルを介してＰＣを外部接続することができる。

【００６３】

この車両用補助給電装置１００における上記制御回路部４は、上記第２のＤＣ出力端子３２を構成しているにジャックにＰＣ電源ケーブルがプラグを介して外部接続され、上記ＰＣ電源ケーブルを介してＰＣが外部接続された状態で、ユーザが電源スイッチ４１を押して電源ＯＮにすると、電源ＯＮを検知して上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を緑色点灯状態として電源ＯＮを表示するとともに、上記出力制御部により上記出力回路部３の動作を制御して、ＤＣ１９ＶのＰＣ駆動用の電源を上記第２のＤＣ出力端子３２からＰＣ電源ケーブルを介してＰＣに供給する。

【００６４】

また、この車両用補助給電装置１００において、上記第３のＤＣ出力端子３３には、ＵＳＢ（Universal Serial Bus）で給電可能な携帯音楽プレーヤ等の電子機器を市販のＵＳＢケーブルを介して接続することができる。

【００６５】

この車両用補助給電装置１００における上記制御回路部４は、図９に示すように、上記第３のＤＣ出力端子３３を構成しているにＵＳＢジャックにＵＳＢケーブル１３０がＵＳＢプラグを介して外部接続され、上記ＵＳＢ電源ケーブル１３０を介してＵＳＢ機器３００が外部接続された状態で、ユーザが電源スイッチ４１を押して電源ＯＮにすると、電源ＯＮを検知して上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を緑色点灯状態として電源ＯＮを表示するとともに、上記出力制御部により上記出力回路部３の動作を制御して、ＤＣ５ＶのＵＳＢ駆動用の電源を上記第３のＤＣ出力端子３３からＵＳＢ電源ケーブル１３０を介してＵＳＢ機器３００に供給する。

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【００６６】
さらに、この車両用補助給電装置１００には、シガーソケットからなる第４のＤＣ出力端子３４に外部接続されるシガープラグケーブルとして、図１０の（Ａ），（Ｂ）に示すように、２種類のシガープラグケーブルが準備されている。
【００６７】
図１０の（Ａ）に示す第１のシガープラグケーブル１４０Ａは、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を接続するためのケーブルであって、車載対応の電気機器に接続されるＤＣプラグ１４１Ａを一端に備え、シガープラグ１４２を介して上記第４のＤＣ出力端子３４に外部接続される。
【００６８】
図１０の（Ｂ）に示す第２のシガープラグケーブル１４０Ｂは、ＯＢＤ（On-Board Diagnostic system）システムに対応した車両のメモリバック用のケーブルであって、ＯＢＤ２コネクタ１４１Ｂを一端に備え、シガープラグ１４２を介して上記第４のＤＣ出力端子３４に外部接続される。
【００６９】
この車両用補助給電装置１００における上記制御回路部４は、上記第４のＤＣ出力端子３４を構成しているにシガーソケットに第１のシガープラグケーブル１４０Ａ又は第２のシガープラグケーブル１４０Ｂがシガープラグ１４２を介して外部接続され、シガープラグケーブルを介して外部機器が外部接続された状態された状態で、ユーザが電源スイッチ４１を押して電源ＯＮにすると、電源ＯＮを検知して上記表示制御部により充電量表示部５１の動作を制御し、上記充電量表示部５１を緑色点灯状態として電源ＯＮを表示するとともに、上記出力制御部により上記出力回路部３の動作を制御して、ＤＣ１２Ｖの外部機器駆動用の電源を上記第４のＤＣ出力端子３２からシガープラグケーブルを介して外部機器に供給する。
【００７０】
すなわち、この車両用補助給電装置１００は、上記第４のＤＣ出力端子３４に外部接続される第１のシガーゲーブル１４０Ａを介して車載対応の電気機器を駆動するポータブル電源として機能する。
【００７１】
また、この車両用補助給電装置１００は、上記第４のＤＣ出力端子３４に外部接続される第２のシガーゲーブル１４０Ａを介して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。
【００７２】
ここで、ＯＢＤ（On-Board Diagnostic system）システムは、自動車に搭載されるコンピュータが行う自己故障診断機能であって、使用過程にある自動車の排出ガス浄化装置の機能点検を容易にしている。ＯＢＤ２では、その点検コネクタや通信プロトコル、故障診断コード等が標準化されている。
【００７３】
ＯＢＤ（On-Board Diagnostic system）システムを搭載した車両では、各種診断履歴情報がメモリに保存されており、搭載バッテリを交換する際に、メモリ上の情報を喪失することのないように、メモリにバックアップ電源を供給しておく必要がある。
【００７４】
すなわち、この車両用補助給電装置１００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、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となっている。

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【００７５】
さらに、この車両用補助給電装置１００は、上述の如きジャンプスタータやポータブル電源として機能するばかりでなく、非常時に使用する警告表示灯や照明灯として機能する。

【００７６】
すなわち、この車両用補助給電装置１００における上記制御回路部４は、電源ＯＮの状態でライトセレクトスイッチ４３が押されたことを検知して、表示制御部により充電量表示部５１及び一対の非常用警告灯５３Ａ，５３Ｂを次のように制御する。

【００７７】
上記制御回路部４は、上記ライトセレクトスイッチ４３が１回押されたことを検知すると、上記非常用警告灯５３Ａとして備えられた赤色ＬＥＤを非常灯として点灯させ、上記ライトセレクトスイッチ４３が２回押されたことを検知すると、上記非常用警告灯５３Ｂとして備えられた白色ＬＥＤを点灯させ正面ライトとして機能させ、上記ライトセレクトスイッチ４３が３回押されたことを検知すると、上記一対の非常用警告灯５３Ａ，５３Ｂを交互に、すなわち、赤白交互に点滅させ、そして、上記ライトセレクトスイッチ４３が４回押されたことを検知すると、上記一対の非常用警告灯５３Ａ，５３Ｂを消灯させる。また、上記制御回路部４は、上記ライトセレクトスイッチ４３が３秒以上長押されたことを検知すると、上記充電量表示部５１を駆動して、バッテリの充電量に応じた点灯状態とする。

【００７８】
また、上記制御回路部４は、上記サイドライト・オン／オフ・スイッチ４４の押圧操作に応じて表示制御部により一対の側面照明灯５４Ａ，５４Ｂの動作を制御し、上記サイドライト・オン／オフ・スイッチ４４が押されたことを検知すると、図１１に示すように、上記一対の側面照明灯５４Ａ，５４Ｂを点灯させ、上記サイドライト・オン／オフ・スイッチ４４が再度押されたことを検知すると上記一対の側面照明灯５４Ａ，５４Ｂを消灯させる。

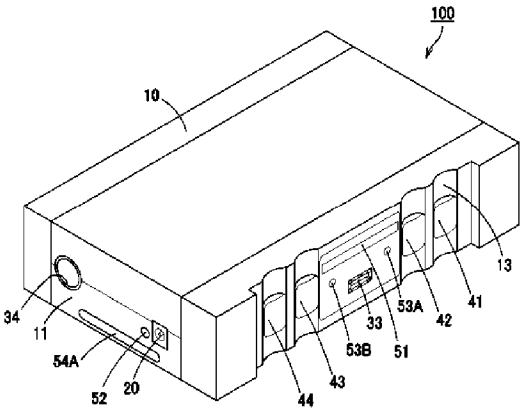
【００７９】
さらに、上記制御回路部４は、上記リチウムイオン蓄電池２のバッテリ電圧を常時監視しており、バッテリ電圧が８．２Ｖまで低下した場合にバッテリロー表示灯５２を点灯して、過放電状態であることを警告する機能を有している。

【符号の説明】

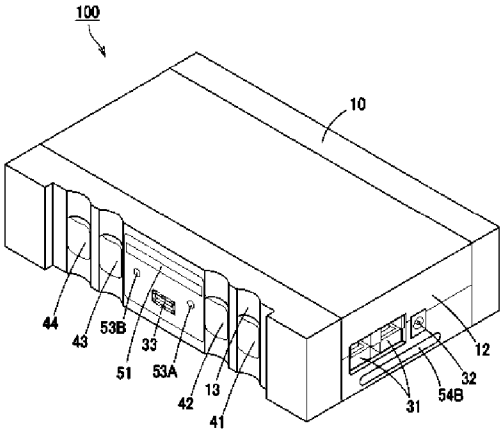
【００８０】
１　充電回路部、２　リチウムイオン蓄電池、３　出力回路部、４　制御回路部、１０　筐体、１１　左側面壁、１２　右側面壁、１３　正面壁、２０　ＤＣ入力端子、３１　第１のＤＣ出力端子、３２　第２のＤＣ出力端子、３３　第３のＤＣ出力端子、３４　第４のＤＣ出力端子、４１　電源スイッチ、４２　ジャンプスタートスイッチ、４３　ライトセレクトスイッチ、４４　サイドライト・オン／オフ・スイッチ、５１　充電量表示部、５２　バッテリロー表示灯、５３Ａ，５３Ｂ　非常用警告灯、５４Ａ，５４Ｂ　側面照明灯、１００　車両用補助給電装置、１１０Ａ　ＡＣアダプタケーブル、１１０Ｂ　シガープラグケーブル、１１１Ａ　ＡＣアダプタ、１１２　ＤＣプラグ、１１１Ｂ　シガープラグ、１２１Ａ、１２１Ｂ　接続クリップ、１２２　プラグ、１２０　ブースタケーブル、１３０　ＵＳＢケーブル、１４０Ａ　第１のシガープラグケーブル、１４０Ｂ　第２のシガープラグケーブル、１４１Ａ　ＤＣプラグ、１４１Ｂ　ＯＢＤ２コネクタ、１４２　シガープラグ、２００　車載バッテリ、３００　ＵＳＢ機器

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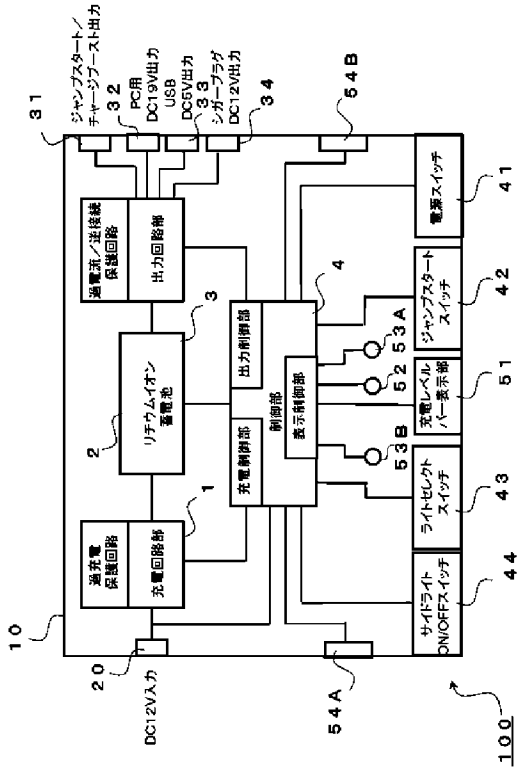
【図１】


100
10
34
11
54A
52
20
44
43
53B
33
51
53A
42
41
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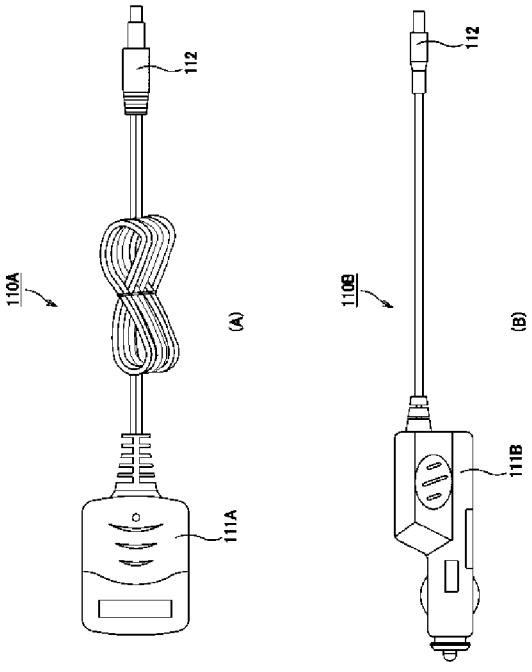
【図２】


100
10
44
43
53B
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33
53A
42
13
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12
32
54B
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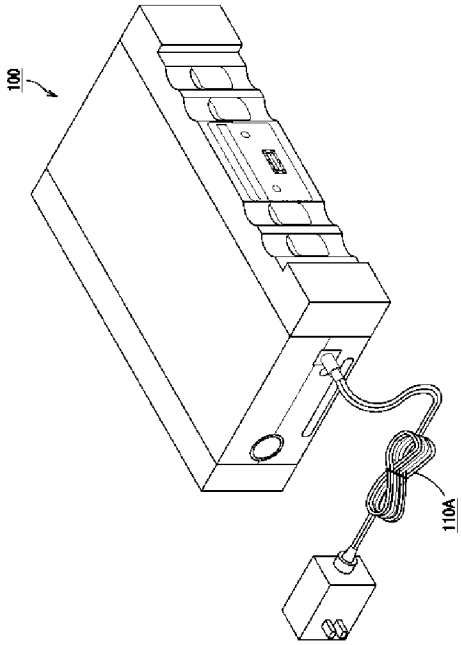
【図３】


31
ジャンプスタート／チャージブースト出力
32
PC用 DC19V出力 USB
33
DC5V出力 シガープラグ DC12V出力
34
54B
通電流／逆接続保護回路
出力回路部
リチウムイオン蓄電池
過充電保護回路
充電回路部
出力制御部
充電制御部
表示制御部
制御部
電源スイッチ
ジャンプスタートスイッチ
充電レベルバー表示部
ライトセレクトスイッチ
サイドライトON/OFFスイッチ
41
42
51
43
44
53A
52
53B
10
20
DC12V入力
54A
100

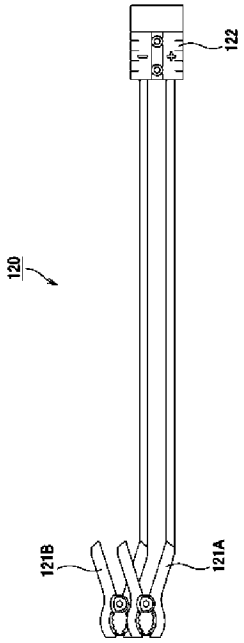
【図４】


110A
112
111A
(A)
110B
112
111B
(B)

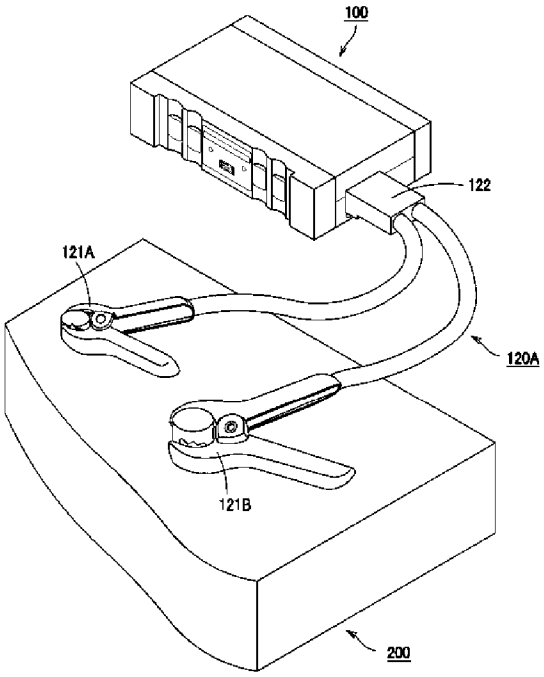
【図５】


100
110A

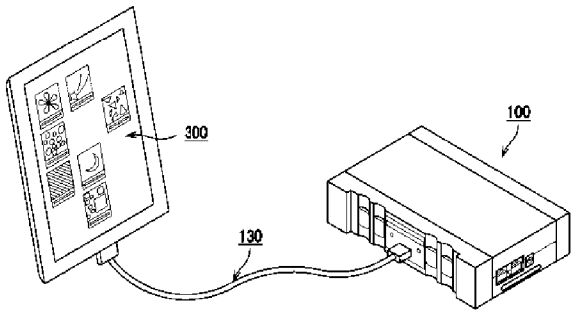
【図７】


122
120
121B
121A

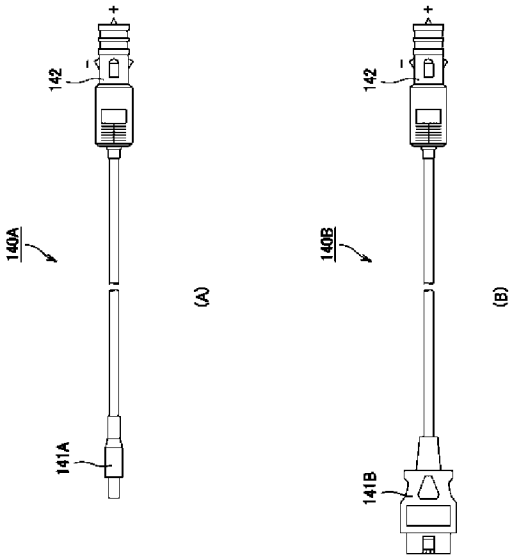
【図８】


100
122
121A
120A
121B
200

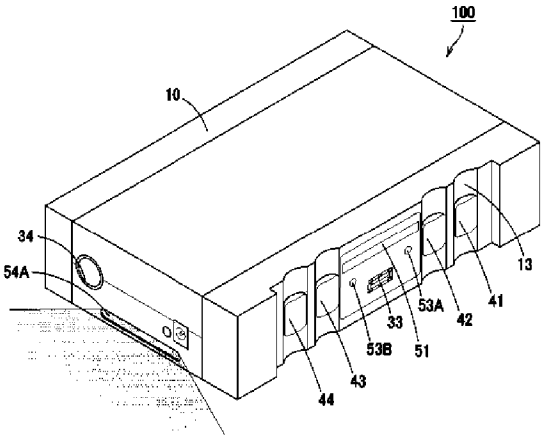
【図９】


300
100
130

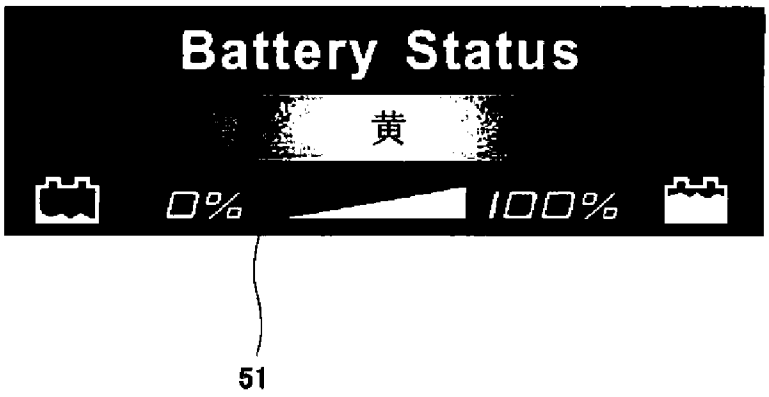
【図１０】


142
140A
141A
(A)
142
140B
141B
(B)

【図１１】


100
10
34
54A
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53A
33
53B
51
43
44

【図６】


Battery Status
黄
0%
100%
51

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ＲＯＯＭ １６０５－６ ＨＵＡ ＱＩＮ ＩＮＴＥＲＮＡＴＩＯＮＡＬ ＢＵＩＬＤＩＮＧ ３４０ ＱＵＥＥＮ’Ｓ ＲＯＡＤ ＣＥＮＴＲＡＬ，ＨＯＮＧ ＫＯＮＧ
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Application Number	16819831
Filing Date	2020-03-16
First Named Inventor	NOOK
Art Unit	2859
Examiner Name	DIAO
Attorney Docket Number	054985-000055-US-002-01

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	1	2006/057497	WO		2006-06-01	LG CHEM		
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	First Named Inventor	NOOK
	Art Unit	2859
	Examiner Name	DIAO
	Attorney Docket Number	054985-000055-US-002-01

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	7	3185027	JP	U	2013-07-25	SFJ Co., Ltd.; Asia Bright Industrial (Hong Kong)	English Abstract attached	☒
	8	2001069673	JP	A	2001-03-16	HITACHI LTD	English Abstract attached	☒
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	Filing Date	2020-03-16
	First Named Inventor	NOOK
	Art Unit	2859
	Examiner Name	DIAO
	Attorney Docket Number	054985-000055-US-002-01

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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	XP 55517268A 1, NOCO Product Brochure, Jump Starter, Lithium GB70 2000A 12V.	
	2	XP 55517270A 1, NOCO Product Brochure, Jump Starter, Lithium GB40 1000A 12V.	
	3	USB Battery Charging Specification Version 1.2 (EX1009)	
	4	Datasheet for LM7805 Voltage Regulator from Fairchild Semiconductor (EX1019)	
	5	GROUNDS OF INVALIDITY: Annex A to the Grounds of Invalidity; PROJECTA product manual for 2200A JUMPSTARTER, P/No.s HP 2012, HP 2200.; Carku E-Power 21 device.	
	6	GROUNDS OF INVALIDITY: Prior use of the Carku E-Power 21 device ("Carku E-Power 21").; User manual for Carku E-Power 21 (Ann 1).; Specification sheet for Carku E-Power 21 (Ann 2).; Claimant's E-catalogue dated 22 April 2014, which included Carku E-Power 21 (Ann 3).; Photograph of claimants' booth at 115th 2014 Canton Fair (Ann 4).; Photographs and quotation sheet rcvd by Edelbert Lenz GmbH & Co. KG (Ann 5).; User manuals and specification sheets rcvd by Kaz Corp. of Japan (Ann 6).; E-Catalogue rcvd by email by Krautli (Schweiz) AG (Ann 7).	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16819831
	Filing Date	2020-03-16
	First Named Inventor	NOOK
	Art Unit	2859
	Examiner Name	DIAO
	Attorney Docket Number	054985-000055-US-002-01

	7	DEFENDANT DELTONA TRANSFORMER CORPORATION'S INVALIDITY CONTENTIONS: USB Implementers Forum, Inc, Battery Charging Specification, Rev 1.1, 4/15/2009.; MICRO-START/PPS, offered for sale as late as 07/29/2013, by Antigravity Batteries.; E-Power, offered for sale as late as 04/15/2013 by Carku.; Battery Tender Power Pack, offered for sale prior to 07/03/2014 by Carku/Deltran USA LLC.; PowerAll, offered for sale as late as 03/26/2014 by Gryphon Mobile Electronics LLC.; Electromate 400, offered for sale as late as 2013 by Black & Decker.
	8	DEFENDANT TII TRADING INC.'S INVALIDITY CONTENTIONS
	9	DEFENDANT'S INVALIDITY AND UNENFORCEABILITY CONTENTIONS: USB Battery Charging Spec Ver 1.2.; E-flite EC Connector Assembly Instruct w 2008.; Datasheet for LM7805 Voltage Regulator from Fairchild Semiconductor.; Carku Product Brochure for Epower-20 jump starter product.; Carku Product Brochure for Epower-21 jump starter product.; MC78XX/LM78XX/MC78XXA 3-Terminal 1A Positive Voltage Regulator from Fairchild Semiconductor Corp. 2001.; Patent Owner The NOCO Company's Preliminary Response in Dongguan IPR.
	10	Memo Opin and Order of US Dist Ct Jud Barker construing disputed terms of claims 1, 9 and 19 of the '015 issued NOCO v. SmarTech Produts, Inc., 1:18-cv-2780 (N.D. Ohio April 2, 2020; NOCO Amend Compl NOCO v Shenzhen Lianfa Tong Tech Co., Ltd., et al., 1:19-cv-01855 (N.D. Ohio April 2, 2020; Dec Wan; Dec Hartup; Dec Kirtley; Special Master Report on Prop Claim Const For USPN 9,007,015 issued NOCO v. Shenzhen Dika Na'Er E-Commerce Co., 1:17CV2282 (N.D. Ohio June 28, 2018) acc/adopt by US Dist Ct Jud Boyko, 2019 WL 1723358
	11	DEFENDANTS' AMENDED FINAL INVALIDITY AND UNENFORCEABILITY CONTENTIONS: The Powerall PBJS12000RD Jump Starter, offered for sale by Gryphon Mobile Electronics at least as early as 11/05/2013.; The Lightning 12V Jump Starter, offered for sale by Pilot, Inc. at least as early as 03/2014.; The L3 Model Jump Starter, offered for sale by Shenzhen Tsevie Company at least as early as 05/19/2019.
	12	STATEMENT OF DEFENSE AND COUNTERCLAIM: Carku Epower-20 jump starter; Carku Epower-21 jump starter; Carku Product Brochure for the Epower-20 jump starter product; Carku Product Brochure for the Epower-21 jump starter product

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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.

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	Examiner Name	DIAO
	Attorney Docket Number	054985-000055-US-002-01

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)	2022-05-02
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.**

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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 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.

ADC EX1002
IPR2025-00885

Court File No. T-343-20

FEDERAL COURT

B E T W E E N:

THE NOCO COMPANY, INC.

Plaintiff

- and -

CANADIAN TIRE CORPORATION, LIMITED

Defendant

STATEMENT OF DEFENCE AND COUNTERCLAIM

1. Except as expressly admitted herein, the Defendant denies all of the allegations contained in the Statement of Claim dated March 4, 2020.

The Relief Requested and Allegations

2. The Defendant has no knowledge of the allegations in paragraphs 3, 5 and 6 of the Statement of Claim.

3. The Defendant admits the allegations in paragraph 4 of the Statement of Claim.

The Defendant

4. The Defendant (**Canadian Tire**) is an Ontario corporation and has been in business for almost 100 years.

5. Canadian Tire is a household name in Canada. With over 500 retail locations across the country, it is one of Canada's most iconic brands. Canadian Tire is primarily engaged in the selling of a wide range of automotive, household, home repair, sport, recreation, exercise and seasonal products principally through a network of Canadian Tire stores, which are operated by independent Canadian Tire Associate Dealers.

Canadian Tire's MotoMaster 1200A and MotoMaster 600A

6. MotoMaster is Canadian Tire's in-house automotive products brand. The MotoMaster brand has significant and longstanding goodwill across Canada and is one of the most popular automotive products brands in the country.

7. With respect to paragraphs 36 of the Statement of Claim, Canadian Tire admits that it has sold and offered for sale in Canada the MotoMaster 1200A Lithium Jump Starter & Power Bank, Canadian Tire product number 011-2063-2, and the MotoMaster 600A Lithium Jump Starter & Power Bank, Canadian Tire product number 011-2062-4 (collectively, the **MotoMaster Jump Starter Products**). Canadian Tire denies the remaining allegations in paragraph 36 of the Statement of Claim.

8. The MotoMaster Jump Starter Products are manufactured by Shenzhen Carku Technology Co. Ltd. (**Carku**). Carku has been manufacturing and selling smart lithium ion battery jump starters since at least February 2012. Carku has developed its own proprietary smart jump starter technology, and it has applied for and obtained patents for this technology in several countries.

The 782 Patent

9. Canadian Tire admits that the Plaintiff is the purported owner of Canadian Patent No. 2,916,782 (**782 Patent**) entitled "Portable vehicle battery jump start apparatus with safety protection". The 782 Patent was filed on July 3, 2014, issued on August 9, 2016 and will expire on July 3, 2034.

10. Canadian Tire has no knowledge regarding the true ownership of the 782 Patent.

11. The 782 Patent has twenty three claims. It has only one independent claim, claim 1, and twenty two dependent claims.

12. The Plaintiff has asserted 12 claims of the 782 Patent against Canadian Tire: independent claim 1 and dependent claims 2-3, 9-15, 17, and 19 (the **Asserted Claims**).

13. Independent claim 1 of the 782 Patent is directed to an apparatus for jump starting a vehicle engine, comprising:

(a) an internal power supply;

(b) an output port having positive and negative polarity outputs;

(c) 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;

(d) 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 and to provide an output signal indicating whether positive and negative terminals of said vehicle battery are properly connected with said positive and negative polarity outputs of said output port;

(e) a power switch connected between said internal power supply and said output port;

(f) 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 switch, such that said power switch is turned on to cause said internal power supply to be connected 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, and is not turned on when signals from said sensors indicate either the absence of a vehicle battery at said output port or improper polarity connection of positive and negative terminals of said vehicle battery with said positive and negative polarity outputs.

14. The remainder of the Asserted Claims are dependent on claim 1 and incorporate all of the elements of claim 1. Claim 2 relates to a jump starter claimed in claim 1 where the internal power supply comprises a lithium ion battery, and claim 3 relates to a jump starter of claim 2 where the lithium ion battery comprises a battery pack of multiple lithium ion batteries.

15. Claims 9-15, 17 and 19 all relate to jump starters of claim 1 further compromising additional elements as follows:

(a) Claim 9 adds 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;

(b) Claim 10 adds a USB output port configured to provide charging power from said internal power supply to a USB-chargeable device;

(c) Claim 11 adds a USB charging port configured to provide charging power from an external power source to said internal power supply;

(d) Claim 12 adds a flashlight circuit configured to provide a source of light for a user, while claim 13 specifies that the source of light is an LED and claim 14 specifies that the microcontroller is configured to control at least one LED to provide a visual alarm indicating an emergency situation;

(e) Claim 15 adds a plurality of visual indicators configured to display remaining capacity status of said internal power supply;

(f) Claim 17 adds a visual indicator configured to warn a user when a vehicle battery is connected with reverse polarity; and

(g) Claim 19 adds a switch configured to activate a manual override mode to enable a user to use the jump starter when said vehicle battery isolation sensor is unable to detect presence of a vehicle battery or said reverse polarity sensor detects that the jump starter is incorrectly connected to a vehicle battery.

Canadian Tire has not Infringed the 782 Patent

16. Canadian Tire denies that either of the MotoMaster Jump Starter Products fall within any of the Asserted Claims. The MotoMaster Jump Starter Products do not have all of the elements of any Asserted Claim.

***Gillette* Defence**

17. The MotoMaster Jump Starter Products are manufactured by Carku and are substantially similar to products Carku has offered for sale and sold to the public since at least as early as April 2014, prior to any relevant date associated with the 782 Patent. The Plaintiff has direct knowledge of the Carku products. In particular, Carku's Epower-21 jump starter (**Epower-21**) which Carku advertised, offered for sale and sold at least as early as April 2014, contained, disclosed and enabled each of the relevant technical features of the MotoMaster Jump Starter Products. At least as early as April 2014, Carku made available a product brochure for the Epower-21 which independently disclosed and enabled each of the relevant technical features of the MotoMaster Jump Starter Products.

18. In light of the above, if the MotoMaster Jump Starter Products fall within the scope of any of the Asserted Claims, which is denied, then those claims also include within their scope the Epower-21 and are therefore invalid by virtue of the availability and disclosure of the Epower-21 and the Epower-21 product brochure prior to any relevant date associated with the 782 Patent. In either case, the Plaintiff's claim for infringement of the 782 Patent must fail. Canadian Tire relies on the *Gillette* defence.

The 782 Patent is Invalid

19. Canadian Tire further pleads that the 782 Patent and each of its claims is, and has always been, invalid and void for the reasons set out below.

The 782 was Anticipated

20. The 782 Patent and its claims are invalid for lack of novelty, contrary to sections 2 and 28.2 of the *Patent Act*.

21. **U.S. Patent Application 2013/0154543:** U.S. Patent Application 2013/0154543 (**US 2013 Application**), entitled "Method and apparatus for providing supplemental power to an engine", was first published on June 20, 2013. The US 2013 Application discloses a portable jump starter which includes various safety features such as separate vehicle battery isolation and reverse polarity sensors.

22. The subject matter of claims 1, 9, 15, 17 and 19 of the 782 Patent are disclosed and enabled by the US 2013 Application.

23. **U.S. Patent No. 6,424,158:** U.S. Patent No. 6,424,158 (**US 158 Patent**) was issued on July 23, 2002. The US 158 Patent discloses "a battery charging system and method that rapidly recharges batteries based on an interactive charging procedure." It includes various safety features such as a voltage sensor that detects the presence of a battery and a reverse polarity sensor that detects whether the battery is connected with reverse polarity.

24. The subject matter of claims 1 and 17 of the 782 Patent are disclosed and enabled by the US 158 Patent.

The 782 Patent was Obviousness

25. The 782 Patent and each of its claims are invalid for obviousness contrary to section 28.3 of the *Patent Act*. The subject matter of each of the claims of the 782 Patent was obvious as of the claim date to a person of ordinary skill in the art, having regard to the common general knowledge and the references listed in Schedule "A" hereto.

26. At all material times, a person of ordinary skill in the art would be aware of the following:

(a) portable power and jump starter devices in general;

(b) the use of voltage regulators in electronic devices;

(c) the use of various safety features in portable power and jump starter devices, including vehicle battery isolation and reverse polarity sensors;

(d) the use of microcontrollers in portable power and jump starter devices;

(e) the use of visual indicators to indicate the remaining capacity of internal power supplies in portable power and jump starter devices; and

(f) the use of various electronic peripherals such as flashlights, USB ports, indicator lights and the like on portable power and jump starter devices.

27. In light of the common general knowledge referenced above and the art set out in Schedule "A" hereto, the subject matter of each of the claims of the 782 Patent was obvious as of the claim date. The 782 Patent claims a mere and obvious aggregation of known components used for their ordinary and obvious purposes.

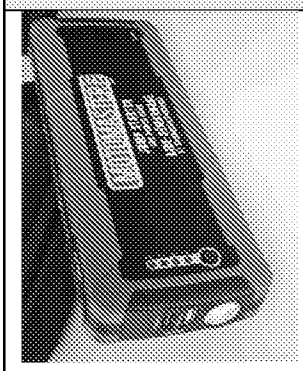
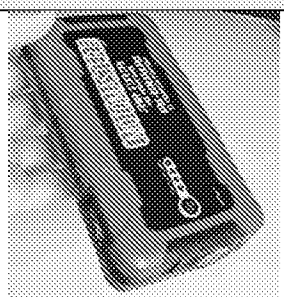
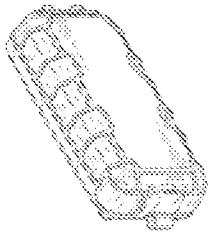
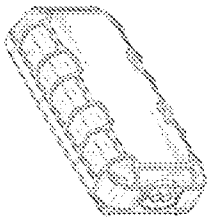
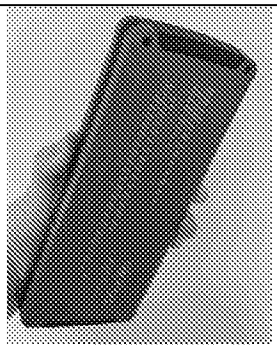
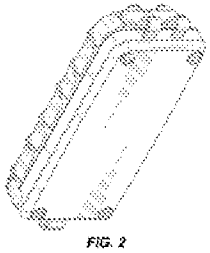
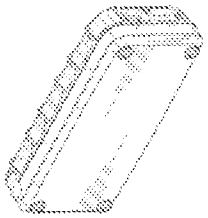
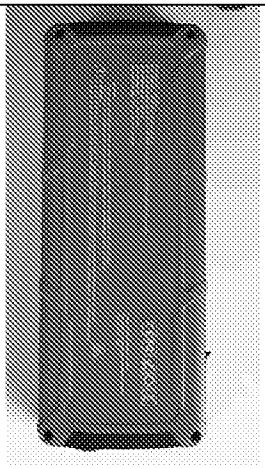
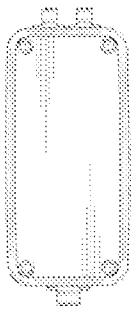
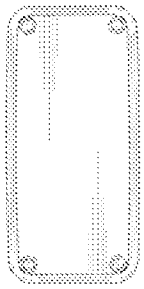
The Noco Designs

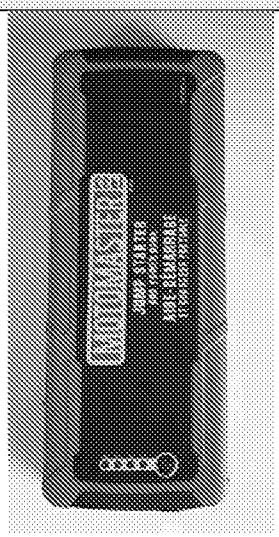
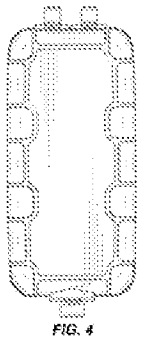
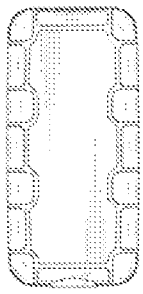
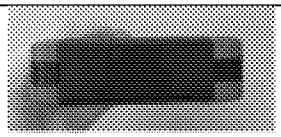
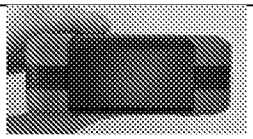
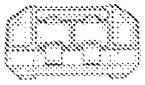
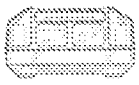
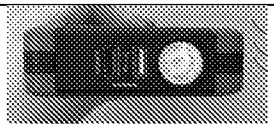
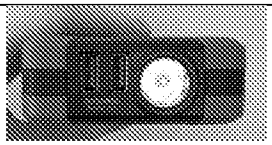
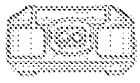
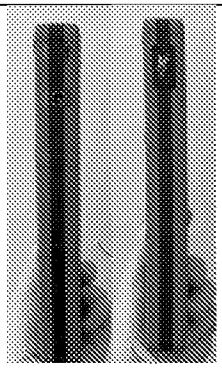
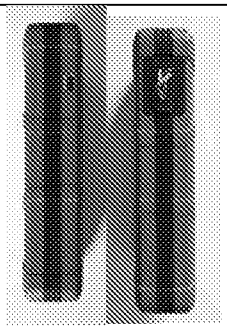
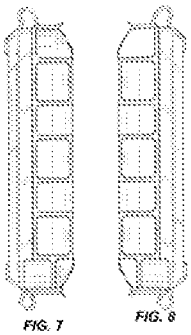
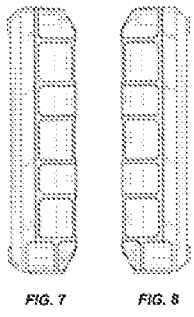
28. The Plaintiff is the purported owner of Canadian Industrial Design Registrations Nos. 160,100 (**100 Design**), 160,101(**101 Design**), and 160,103 (**103 Design**) (collectively the **Noco Designs**). Canadian Tire admits that the 100 and 101 Designs were filed on December 15, 2014, registered on July 22, 2015 and claim priority to US Design Patent Applications filed on July 16, 2014. Canadian Tire admits that the 103 Design was filed on December 15, 2014, registered on September 15, 2015 and claims priority to a US Design Patent Application filed on July 16, 2014.

Canadian Tire has not Infringed the Noco Designs

29. The MotoMaster Jump Starter Products do not infringe the Noco Designs. There are substantial differences between the MotoMaster Jump Starter Products and the Noco Designs particularly given the similarities between the Noco Designs and previously published designs, including the design of the Carku products that the Plaintiff knew about before allegedly creating and applying to register the Noco Designs. These previously published designs include Canadian Industrial Design Registration Nos. 145,036, 137,883, 118,796, 107,977 and 105,457. As a result of the similarity between the Noco Designs and designs that were previously made available to the public, if the Noco Designs are valid, their scope of protection is strictly limited and does not extend to the MotoMaster Jump Starter Products.

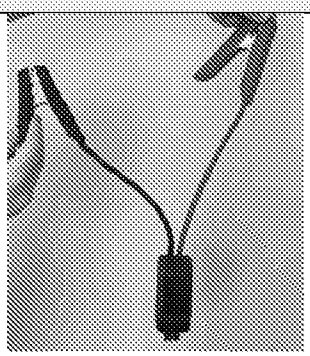
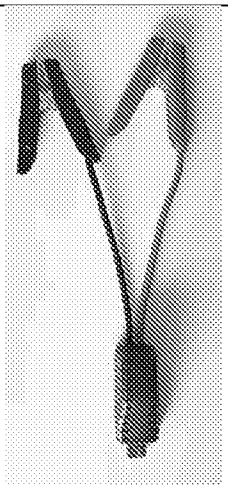
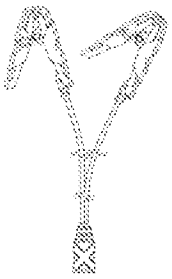
30. Even without regard to the previously published designs, there are substantial differences between the Noco Designs and the MotoMaster Jump Starter Products. For example and without limitation, as compared to the 100 Design and 101 Design, the MotoMaster Jump Starter Products differ substantially in their overall profile and shape, location of the various ports and lack of the grid like ribbing design shown in the registrations:

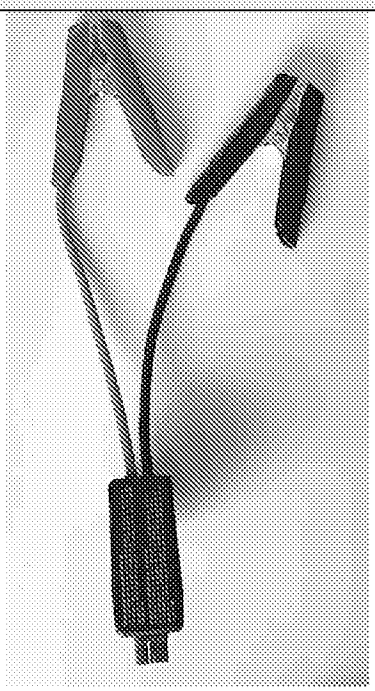
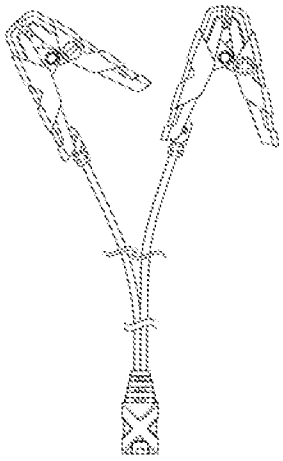
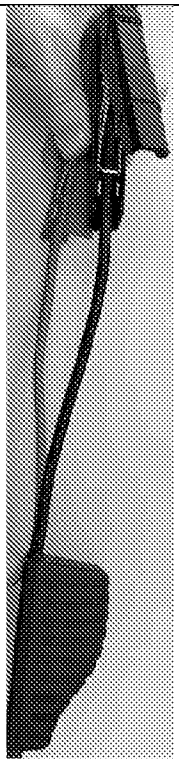
MotoMaster 1200A	MotoMaster 600A	The 100 Design	The 101 Design
		 FIG. 1	 FIG. 1
		 FIG. 2	 FIG. 2
		 FIG. 3	 FIG. 3

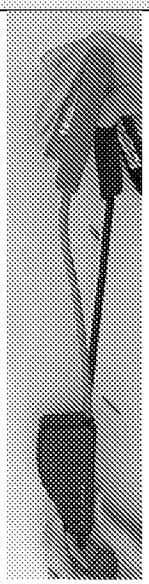
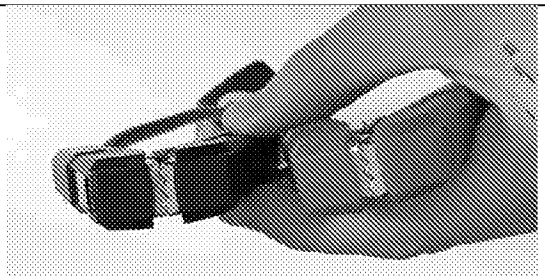
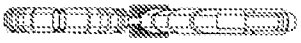
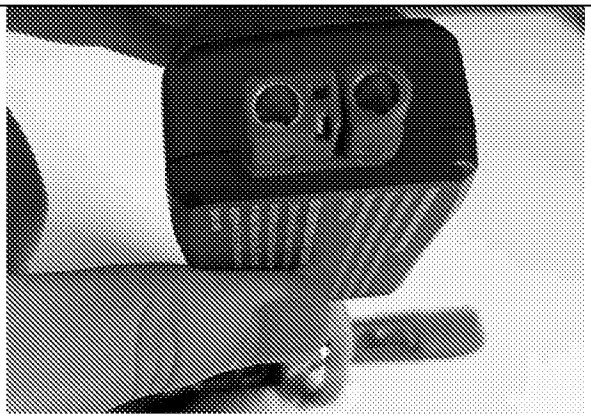
MotoMaster 1200A	MotoMaster 600A	The 100 Design	The 101 Design
		 FIG. 4	 FIG. 4
		 FIG. 5	 FIG. 5
		 FIG. 6	 FIG. 6
		 FIG. 7 FIG. 8	 FIG. 7 FIG. 8

31. Any features the 103 Design has in common with the jumper cable portions of the MotoMaster Jump Starter Products are dictated solely by utilitarian function and are common in

the art and are therefore not protected by the 103 Design. In any event, The patterns on the MotoMaster Jump Starter Products' clamp grips differ substantially from the clamp grip patterns depicted in the 103 Design. Furthermore, the design of the plug end of MotoMaster Jump Starter Products differs substantially from the plug depicted in the 103 Design. These difference are apparent from a comparison between the MotoMaster Jump Starter Products and the 103 Design as shown below.

MotoMaster Jump Starter Products	The 103 Design
	 FIG. 1
	 FIG. 2

MotoMaster Jump Starter Products	The 103 Design
	 FIG. 3
	 FIG. 4

MotoMaster Jump Starter Products	The 103 Design
	 FIG. 5
	 FIG. 6
	 FIG. 7

The Noco Designs are Invalid

32. Canadian Tire further pleads that the Noco Designs are, and have always been, invalid for the reasons set out below.

The Noco Designs were Previously Published

33. The designs reflected in the NOCO Designs were published more than one year prior to the filing dates of the associated applications. The NOCO Designs are therefore invalid.

The Noco Designs were not Original

34. There is nothing original about the Noco Designs. Battery boosters and jumper cables with substantially the same features of shape, configuration, pattern and ornament as claimed in the Noco Designs have been sold for many years and in any event before the Noco Designs were first made. The Plaintiff has failed to identify any unique or original aspects of the appearance of the Noco Designs.

Canadian Tire did not Act Contrary to Paragraph 7(b) of the *Trademarks Act*

35. Canadian Tire denies the Plaintiff's allegations in paragraphs 26-35 of the Statement of Claim that the Plaintiff has continuously used distinctive housing features (the **Housing Get-Up**) and distinctive clamps (the **Clamp Get-Up**) for its automotive and marine power products sold in Canada. The Housing Get-Up and Clamp Get-Up are herein collectively referred to as the **Noco Alleged Get-Ups**.

36. Canadian Tire did not direct public direct public attention to the MotoMaster Jump Starter Products in such a way as to cause or be likely to cause confusion in Canada between its goods and the goods of the Plaintiff contrary to paragraph 7(b) of the *Trademarks Act* or otherwise pass off its goods as those of the Plaintiff. Canadian Tire denies that: (i) the Plaintiff has generated any goodwill in the Noco Alleged Get-Ups; (ii) Canadian Tire has made any misrepresentation that would give rise to liability; and (iii) the Plaintiff has suffered damages, or is likely to suffer damages, as a result of Canadian Tire's actions.

37. Referring to paragraphs 29 and 34 of the Statement of Claim, Canadian Tire denies that the Noco Alleged Get-Ups have developed any goodwill, reputation or secondary meaning in the

Noco Alleged Get-Ups, let alone sufficient reputation to ground a claim in passing-off. The Plaintiff uses traditional trademarks to distinguish its goods. Neither the Housing Get-Up nor the Clamp Get-Up are inherently distinct when compared to similar automotive and marine product housings and clamps, respectively.

38. Even if the Plaintiff has developed sufficient goodwill and reputation in the Noco Alleged Get-Ups, which is expressly denied, Canadian Tire has made no misrepresentation that would give rise to liability. The MotoMaster Jump Starter Products are visually distinct from the Noco Alleged Get-Ups. Further, the MotoMaster Jump Starter Products all prominently use the "MOTOMASTER" trademark which clearly distinguishes the MotoMaster Jump Starter Products from the Plaintiff's products, which prominently use the "NOCO" trademark and other proprietary trademarks. The lack of any resemblance between the MotoMaster Jump Starter Products and the Noco Alleged Get-Ups as well as the prominent use of proprietary trademarks on the products, means that there is no likelihood of confusion between the MotoMaster Jump Starter Products and the Plaintiff's products.

39. Even if Canadian Tire made misrepresentations regarding the MotoMaster Jump Starter Products, which it expressly denies, such acts have not caused damages to the Plaintiff.

COUNTERCLAIM

40. The Defendant claims:

(a) a declaration that Canadian Patent No. 2,916,782 and each of its claims are invalid, void and of no force or effect;

(b) a declaration that Canadian Industrial Design Registration Nos. 160,100, 160,101 and 160,103 are invalid, void and of no force and effect;

(c) costs of this counterclaim on a scale to be directed by the Court; and

(d) such further and other relief as counsel may advise and this Honourable Court may deem just.

41. The Defendant pleads and relies on the allegations set out in the Statement of Defence.

42. The Defendant proposes that this action be tried in Toronto, Ontario.

August 4, 2020

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Federal Court

AND TO: **SMART & BIGGAR LLP**
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Solicitors for the Plaintiff
(Defendant by Counterclaim)

SCHEDULE A

1. U.S. Patent No. 5,319,298 Battery maintainer and charger apparatus published on June 7, 1994.

2. U.S. Patent No. 6,424,158 Apparatus and method for carrying out diagnostic tests on batteries and for rapidly charging batteries published on January 24, 2002.

3. U.S. Patent No. 6,426,606 Apparatus for providing supplemental power to an electrical system and related methods published on July 30, 2002

4. U.S. Patent No. 7,345,450 Microprocessor controlled booster apparatus with polarity protection published on March 18, 2008

5. WO Publication No. 2010/129723 Low-voltage connection with safety circuit and method for determining proper connection polarity first published on November 11, 2010.

6. U.S. Patent No. 8,172,603 Quick-release battery cable system published on May 8, 2012.

7. China Patent Application No. 2013/10004817.1A emergency power supply published on April 24, 2013.

8. U.S. Patent Application No. 2013/0154543 Method and apparatus for providing supplemental power to an engine published on June 20, 2013.

9. The Carku Epower-20 jump starter.

10. The Carku Epower-21 jump starter.

11. Carku Product Brochure for the Epower-20 jump starter product.

12. Carku Product Brochure for the Epower-21 jump starter product.

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IPR2025-00885

Court File No. T-343-20

FEDERAL COURT

BETWEEN:

THE NOCO COMPANY, INC.

Plaintiff

- and -

CANADIAN TIRE CORPORATION, LIMITED

Defendant

STATEMENT OF DEFENCE AND COUNTERCLAIM

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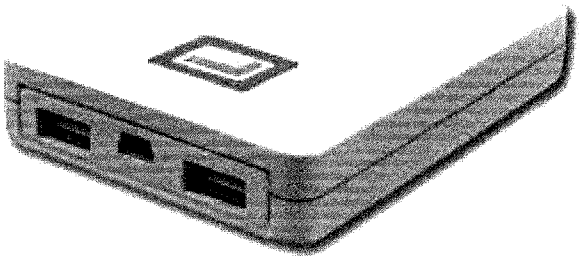
Solicitors for the Defendant
(Plaintiff by Counterclaim)

ADC EX1002
IPR2025-00885

TOPCOM TECHNOLOGY CO., LTD.

Specification for Power bank

Suitable for most digital devices with DC 5V input



Date : 2011/11/15
From : Linda Lin

HEADQUARTER:

TOPCOM TECHNOLOGY CO., LTD

ADDRESS : No.99-9, Sec 1, Huanjung Rd,
Taichung 40672, Taiwan

TEL : 886-4-24228026
FAX : 886-4-24228415
www.topcomtech.com.tw

FACTORY:

TOPCOM TECHNOLOGY SHENZHEN CO., LTD

ADDRESS: 4F, Building E, Zhongxi Industrial Park, Tongyu Industrial Zone, Buyong Village, Shajing Town, Baoan District, Shenzhen City, Guangdong Province, China

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TOPCOM TECHNOLOGY CO., LTD.

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4. Operation Instruction .....3~4

5. Problems and Solutions.....5

6. Caution 5

7. Limited Warranty.....5

8. Accessories.....5

9. Package..... 6

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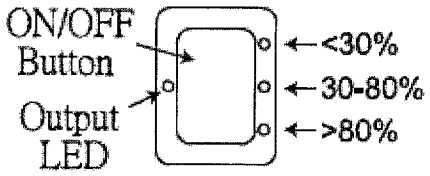
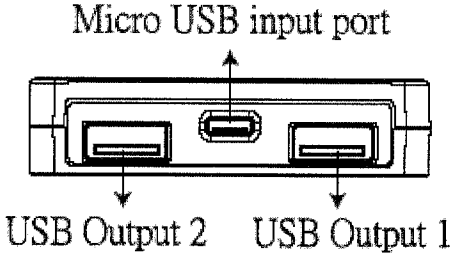
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UNIVERSAL POWER BANK *Page:2/7*

1.Subject

This power bank is mainly for charging when the portable products are with less power. Can be used to charge anytime, anywhere and be the good friend of people.

2.Product Specification

Model	PB-5200
Input Voltage	DC 5V
Input Current	500 / 1000 mA
Output Voltage	DC 5.1V
Output Current	2.1A (Max.)
Power/ Capacity Indicator	
Input / Output Port	
Dimension (mm)	102*66*16

- The system is built-in smart IC controller to automatically detects the input power and selects proper current 500mA or 1000mA to charge the power bank. it will automatically detect the connected power supply capacity before charging. When the power capacity of equipment more than 1000mA, the power bank will accept the charge with 1000mA, if the supply capacity is less than 1000mA, the power bank will accept the charge via 500mA. The system refuses to charge the power bank if output voltage is under 5V or current under 500mA.

- Required Environment
  * Operating Temperature : 0-40℃
  * Operating Relative : 5~95%RH
  *:Storage Tmperature : -20~85℃

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3. Features

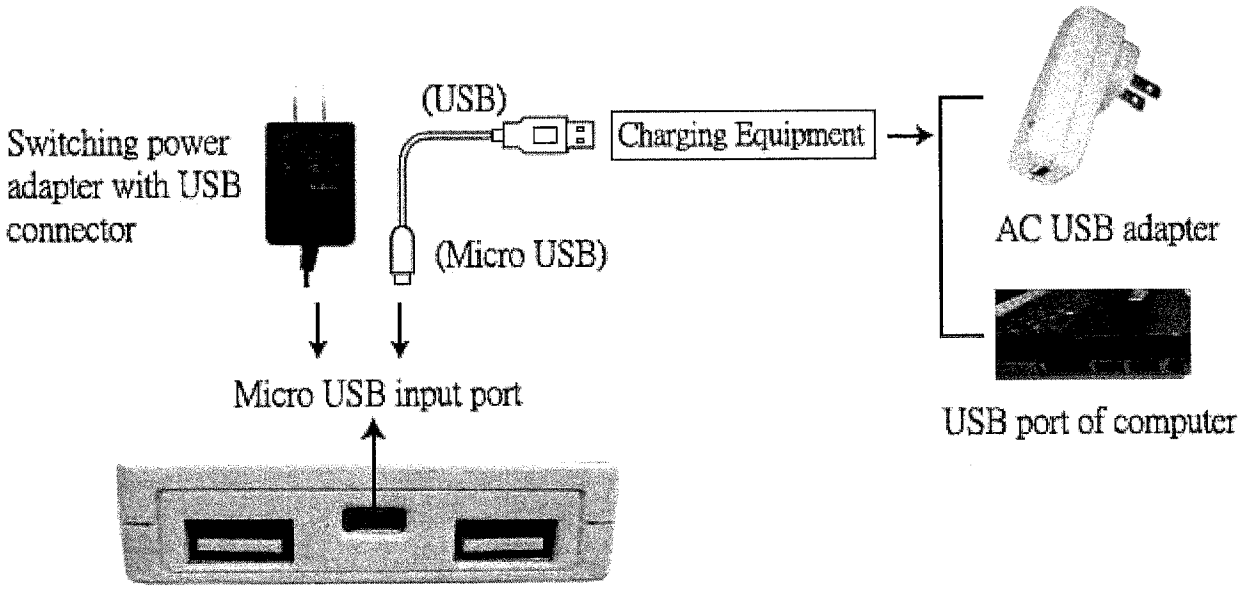
- Built-in high-tech, high efficiency cells, powerful with long cycle life.
- One or two USB ports to allow charging one or two devices simultaneously..
- Allow the power bank to charge digital devices while the power bank is charged.
- Double protection design: One for battery, other one for system with over charge, over voltage, over current and short circuit protection.
- Intelligent display of LED to indicate the charging status and power levels.
- Suitable for most digital devices with DC 5V input, such as tablet PC、 smart phone、iPhone、iPod、MP3、MP4、GPS、PSP..etc.

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4. Operation Instruction

How to recharge power bank

1. Charging Equipment : USB port of computer, AC USB adapter, Switching power adapter with USB connector.
2. Connect the cable to the power sources and power bank (Photo 1)
3. In 5 seconds after connection, one power level LED flashes to indicate the power bank is charged properly. After fully charged, 3 LEDs turn to solid light.



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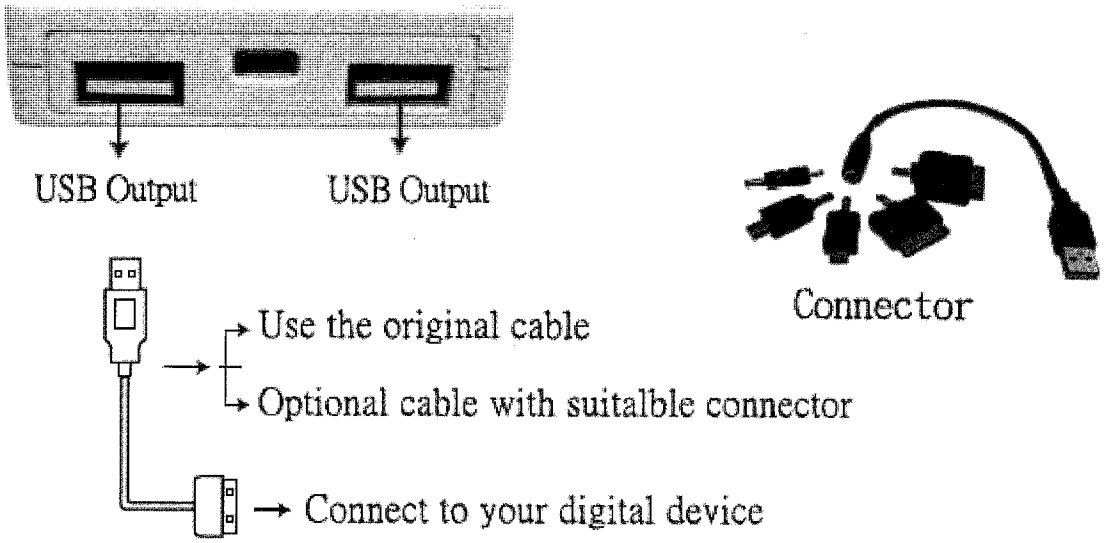
TOPCOM TECHNOLOGY CO., LTD.
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How to charge your digital device

1. Use the original cable or optional cable with suitable connector.
2. Connect the cable to the power bank and your digital device (As below photo)
3. Press the on/off button to check the charging status

Charging status indication:

1. Power indicator: the power LED lights up to indicate power bank is functioning well.
2. Power capacity Indicator : The power capacity LEDs light up according to the possess power capacity. All lights off means it runs out of power.



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- If 3 Power capacity LEDs flash , it indicates the power sources is not proper for charging, try other power sources.
- The power bank can charge two devices simultanesouly. Hower, when one device draws certain amount power 2A~2.1A,such as iPad, you may not able to use both USB port. If ouput cutrrent is over 3A, it may deactivate the power bank and all the lights off. If this occurs, just disconnect your digital devices and charge the power bank to reset it.

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UNIVERSAL POWER BANK *Page:5/7*

5. Problems and Solutions

Unable to charge the power bank

1. The charging equipment is not correct , please use correct power equipment.
2. Make sure the power source with output DC 5V 500~1000mA.
3. Confirm the charging equipmentis connected to the Micro USB correctly.
4. The charging equipment may not work. Please try other proper equipment.
5. If any of the above doesn't works, please contact your reseller.

Unable to charge your digital device

1. The power bank is not compatible with your digital device. Make sure your device supports charging with input 5V power.
2. Check the connection.
3. The USB cable or connector may be damaged. Please replace with new ones.
4. The remaining power of power bank is too low to charge the device. Please charge the power bank first.
5. If any of the above doesn't works, please contact your reseller.

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6. Caution:

1. Before initial use,fully charge to activate the battery.
2. Keep away from fires and water.
3. Avoid impact.
4. Do not disassemble the product.

7. Limited Warranty

The limited warranty is for the product only to the person who originally purchased the product from the reseller or distributor. The manufacturer would fulfill the warranty obligation according to the local warranty policy in which you purchased our products. The limited warranty doesn't cover the products that has been subjected to abuse, accident, alteration, modification, misuse, and exposure of grease, dust, or high temperature and humidity.

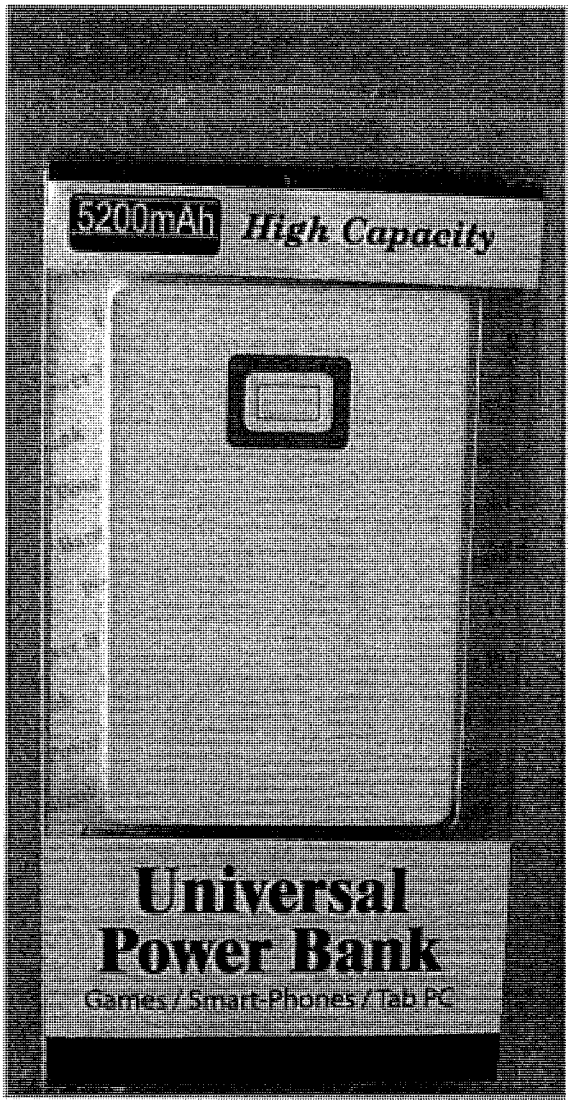
8.Accessories

Charging cable *1 pcs

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9.Package



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UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Clark S. Cheney
Administrative Law Judge

In the Matter of **CERTAIN PORTABLE BATTERY JUMP STARTERS AND COMPONENTS THEREOF**	**Inv. No. 337-TA-1256**

RESPONSE OF QVC, INC. TO THE SECOND AMENDED COMPLAINT AND NOTICE OF INVESTIGATION

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Counsel for Respondent
QVC, Inc.

Pursuant to 19 C.F.R. § 210.13, Respondent QVC, Inc. ("QVC" or "Respondent"), by and through its undersigned attorneys, submits this response ("Response") to the Second Amended Complaint[1] under Section 337 of the Tariff Act of 1930 filed by The NOCO Company ("NOCO" or "Complainant") on April 21, 2021 by way of Complainant's Unopposed Omnibus Motion to Amend the Complaint and Notice of Investigation and Withdraw Certain Allegations as to the Halo Accused Products which was granted on April 23, 2021 through Order No. 13, and the Notice of Institution of Investigation issued by the United States International Trade Commission ("ITC" or "Commission") on March 17, 2021, and published in the Federal Register on March 23, 2021 (the "Notice of Investigation").

RESPONSE TO THE COMPLAINT

Respondent denies that it has engaged in unfair competition or violated Section 337 of the Tariff Act of 1930, as amended, by importing, selling for importation, or selling within the United States after importation any product that infringes any valid and enforceable intellectual property right at issue in this Investigation. Respondent further denies that any patent claims at issue in this Investigation are valid or enforceable. The responses below reflect the current status of Respondent's knowledge and belief regarding the subject matter of the allegations to which it responds. Respondent reserves the right to supplement, modify, and/or amend its responses based on any additional facts or developments that become available or that arise after the filing of this Response.

[1] QVC disputes any and all allegations stated against QVC related to a violation of Section 337 that have been presented in any of the various versions of NOCO's complaints, amended complaints, or letters identifying changes to be made to the complaint.

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Respondent denies each and every allegation averred in the Complaint that is not expressly admitted below. Any factual allegation admitted below is admitted as to only the specific admitted facts, and not as to any purported conclusions, characterizations, implications, or speculations that might follow from the admitted facts. On personal knowledge, Respondent responds to the numbered paragraphs of the Complaint as follows:

I. INTRODUCTION[2]

1. The NOCO Company ("NOCO" or "Complainant"), a 100 plus year old company designing and creating premium battery products in the United States for the automotive industry, respectfully requests that the U.S. International Trade Commission ("Commission") commence an investigation pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 ("Section 337") to remedy the unlawful importation into the United States, the sale for importation, offer for sale, and/or the sale within the United States after importation by the owner, importer, or consignee, of certain portable battery jump starters and components thereof that infringe one or more of the valid and enforceable United States patents owned by NOCO.

RESPONSE: Respondent admits that NOCO filed a Complaint pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, requesting that the Commission institute an investigation against certain Respondents. Respondent denies that it has engaged in any unlawful activity that constitutes a violation of Section 337. Respondent denies any remaining allegations in Paragraph 1.

2. On information and belief, the Proposed Respondents, as listed in Section II.B., *supra*, are manufacturers, importers, trading companies, and retailers based in China and the United States. Respondents have engaged, and continue to engage, in unfair acts in violation of Section 337 through the unlicensed importation, sale for importation, offer for sale, and/or sale after importation into the United States of portable battery jump starters having certain safety features ("Accused Products"). Upon information and belief, the Accused Products have been imported into the United States.

RESPONSE: Respondent admits that Complainant's allegations are based on alleged unfair

[2] QVC repeats the headings in the Complaint for reference purposes only. To the extent such headings purport to express factual allegations to which a response is required, QVC specifically denies any such allegations.

acts in violation of Section 337 through the alleged unlicensed importation, sale for importation, offer for sale, and/or sale after importation into the United States of portable battery jump starters having certain safety features. To the extent Paragraph 2 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies Complainant's allegations that it has violated or that it continues to violate Section 337 in any manner. Respondent denies any remaining allegations in Paragraph 2.

3. The Accused Products infringe one or more of the Asserted Claims of United States Patent Nos. 9,007,015 and 10,604,024 (collectively, the "Asserted Patents"), which are both owned by NOCO. Pursuant to Commission Rule 210.12(a)(9)(i), copies of the '015 Patent and the '024 Patent, are attached to this Complaint as Exhibits 1 – 2, respectively.

RESPONSE: Respondent admits that NOCO alleges infringement of one or more claims of U.S. Patent No. 9,007,015 ("the '015 Patent") and one or more claims of U.S. Patent No. 10,604,024 ("the '024 Patent") (collectively, the "Asserted Patents"). Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of the Asserted Trademarks and therefore denies such allegations. To the extent Paragraph 3 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies that the Asserted Patents are infringed, valid, and/or enforceable. Respondent admits that Exhibits 1 and 2 to the Complaint appear to be, on their face, copies of the '015 Patent and '024 Patent, respectively. Respondent denies any remaining allegations in Paragraph 3 and any corresponding footnotes.

4. Certain of Respondents' Accused Products also infringe one or more of U.S. Trademark Reg. Nos. 4,811,656 and 4,811,749 (collectively, the "Asserted Trademarks"), which are both owned by NOCO, in violation of Section 337(a)(1)(C). Pursuant to Commission Rule 210.12(a)(9)(i), copies of the '656 Trademark and '749 Trademark are attached to this Complaint as Exhibits 3-4, respectively.

RESPONSE: Respondent admits that NOCO alleges infringement of one or more of U.S.

Trademark Reg. Nos. 4,811,656 and 4,811,749 (collectively, the "Asserted Trademarks"). Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of the Asserted Trademarks and therefore denies such allegations. To the extent Paragraph 4 contains legal conclusions, no response is required. Complainant's allegations of trademark infringement do not appear to be directed at Respondent, and Respondent lacks knowledge or information to form a belief as to the allegations regarding trademark infringement and therefore denies the allegations. Respondent admits that Exhibits 3 and 4 to the Complaint appear to be, on their face, copies of the '656 Trademark and '749 Trademark, respectively. Respondent further admits that, in Footnote 2, NOCO represents that certified copies of the '656 Trademark and '749 Trademark have been requested and will be filed upon receipt. Respondent denies any remaining allegations in Paragraph 4 and any corresponding footnotes.

5. Complainant asserts that the Accused Products infringe at least the following claims of one or more Asserted Patents in violation of Section 337(a)(1)(B)(i), either literally or under the doctrine of equivalents:

Asserted Patent	Asserted Claims
9,007,015	**1**, 4, 11, 14, 18, 19, 21
10,604,024	**1,** 4, 5, 6, 16, 19, 23, 24, 26, **29**, **30**

Table 1. The Asserted Claims

RESPONSE: Respondent admits that Paragraph 5 identifies asserted claims. To the extent Paragraph 5 contains legal conclusions, no response is required. To the extent a response is required, Respondent specifically denies infringing, directly or otherwise, any valid and enforceable claim of the Asserted Patents. Respondent denies any remaining allegations in Paragraph 5 and any corresponding footnotes.

6. Pursuant to Commission Rules 210.10(b)(1) and 210.12(a)(12), Complainant states

that a plain English description of the category of Accused Products is portable, battery-powered devices that are used to jump-start batteries such as those in automobiles, trucks, and other vehicles, and related components, namely battery cables and clamps.

RESPONSE: To the extent Paragraph 6 contains legal conclusions, no response is required. To the extent a response is required, Respondent lacks knowledge or information to form a belief as to the remaining allegations of Paragraph 6 and therefore denies such allegations.

7. As required by Section 337(a)(2) and (3), a domestic industry exists and is well established in the United States for each of the Asserted Products and for products and technology protected by the Asserted Patents and Asserted Trademarks.

RESPONSE: To the extent Paragraph 7 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies that a domestic industry as required by Section 337(a)(2) and (3) exists or is well established in the United States for each of the Accused Products and for products and technology allegedly protected by the Asserted patents and Asserted Trademarks. Respondent otherwise lacks knowledge or information to form a belief as to the remaining allegations of Paragraph 7 and therefore denies them.

8. Complainant NOCO seeks a general exclusion order pursuant to Section 337(d)(2) excluding from entry into the United States all products that infringe one or more claims of any of the Asserted Patents and/or are sold or advertised using the Asserted Trademarks. Complainant further seeks cease and desist orders pursuant to Section 337(f) directing Respondents and those acting in conjunction with Respondents to cease the importation, offering for sale, promotion, marketing, advertising, demonstration, and warehousing of inventory for distribution, sale, and use of such products within the United States. Complainant also seeks a bond pursuant to Section 337(j).

RESPONSE: Respondent admits that Complainant seeks certain relief from the Commission and to the extent Paragraph 8 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies that Complainant is entitled to any relief from the Commission, and specifically denies infringing any valid and enforceable claim of the Asserted Patents and the Asserted Trademarks. Respondent denies any remaining allegations in Paragraph

8.

9. In the alternative, should the Commission find that a general exclusion order is not appropriate, NOCO respectfully requests that limited exclusion orders be entered against each named Respondent and its subsidiaries, predecessors, affiliates, agents, successors, and assigns.

RESPONSE: Respondent admits that Complainant seeks certain relief from the Commission and to the extent Paragraph 9 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies that Complainant is entitled to any relief from the Commission. Respondent denies any remaining allegations in Paragraph 9.

II. THE PARTIES

A. Complainant NOCO

10. Complainant NOCO is an Ohio corporation having its principal place of business at 30339 Diamond Parkway #102, Glenwillow, Ohio 44139.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 10 and therefore denies such allegations.

11. NOCO is a privately held family company that was founded in the United States over 100 years ago. Joseph H. Nook, a tire and battery distributor from Cleveland, Ohio, founded The NOCO Company in 1914. Mr. Nook set out to develop a product that would prevent battery corrosion. After several hundred different formulations, Mr. Nook began commercially manufacturing and distributing the world's first Battery Corrosion Preventative which he called "NCP2," which is an acronym for "No Corrosion Product" which is applied in "2 Steps." The NCP2 brand quickly became a household name in every major battery and automotive shop. For over 100 years, the NCP2 brand has been preventing battery corrosion on over a billion vehicles and applications worldwide.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 11 and therefore denies such allegations.

12. Today, NOCO, still owned and managed by the Nook family, remains a leading innovator in the automotive battery industry, and designs and manufactures premium consumer battery chargers, jump starters, solar panels, and portable power devices as well as a wide range related battery products and accessories.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the

allegations of Paragraph 12 and therefore denies such allegations.

13. NOCO has all right, title, and interest in the Asserted Patents and Asserted Trademarks. *See* Exs. 6 and 7.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of all right, title, and interest in the Asserted Patents and Asserted Trademarks and therefore denies such allegations. To the extent a further response is necessary, Respondent admits that Exhibits 6 and 7 appear to include, on their face, documents titled "Assignment" that were filed with the USPTO. Respondent denies any remaining allegations in Paragraph 13.

14. NOCO takes significant measures to protect its intellectual property rights. NOCO first began noticing the appearance of the Accused Products in the U.S. marketplace in 2014 shortly after the introduction of its Boost® products and since then has continuously endeavored to stop the entities involved. NOCO's IPR protection efforts are outlined in Section XI, *infra.*

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to allegations of Paragraph 14 and therefore denies such allegations.

B. Proposed Respondents

15. The sections below provide information sufficient to identify the Proposed Respondents. Additional information regarding the Proposed Respondents' unfair acts as they relate to the Accused Products can be found in Section VI below, and in the attached Confidential Declaration of Anne Hurst. *See* Ex. 44C. For the purposes of this Complaint, the Proposed Respondents are grouped by the entity that is believed to be the manufacturer of a particular design, and all entities related to the importation of that design.

RESPONSE: Respondent admits that NOCO, in the subsequent sections and relevant Confidential Declarations, provides information alleging to identify the Proposed Respondents. Respondent denies that it has engaged in any unfair acts as they relate to the Accused Products. Respondent denies any remaining allegations of Paragraph 15, including those included in the corresponding footnotes.

1. Carku Respondents

a) Advance Auto Parts, Inc.

16. On information and belief, Respondent Advance Auto Part, Inc. ("Advance Auto") is a company organized and existing under the laws of the United States, having its principal place of business located at 2635 East Millbrook Road, Raleigh, North Carolina 27604.

RESPONSE: Paragraph 16 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 16 as well as the footnote in the section heading, and therefore denies such allegations.

17. On information and belief, Advance Auto is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 17 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 17 and therefore denies such allegations.

b) Antigravity Batteries LLC

18. On information and belief, Respondent Antigravity Batteries LLC ("Antigravity") is a company organized and existing under the laws of the United States, having its principal place of business located at 15622 Broadway Center Street, Gardena, California 90248.

RESPONSE: Paragraph 18 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 18 and therefore denies such allegations.

19. On information and belief, Antigravity is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 19 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 19 and therefore denies such allegations.

c) [WITHDRAWN]

20. [WITHDRAWN]

RESPONSE: Paragraph 20 of the Complaint has been withdrawn, thus no response is required.

21. [WITHDRAWN]

RESPONSE: Paragraph 21 of the Complaint has been withdrawn, thus no response is required.

d) [WITHDRAWN]

22. [WITHDRAWN]

RESPONSE: Paragraph 22 of the Complaint has been withdrawn, thus no response is required.

23. [WITHDRAWN]

RESPONSE: Paragraph 23 of the Complaint has been withdrawn, thus no response is required..

e) Gooloo Technologies LLC & Shenzhen Gooloo E-Commerce Co. Ltd.

24. On information and belief, Respondent Gooloo Technologies LLC ("Gooloo") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 303 Room Bantian Business Center Bantian Wuhe Road, Longgang Dist., Shenzhen China 51800. Gooloo is believed to be affiliated with Respondent Shenzhen Gooloo E- Commerce Co., Ltd. ("Shenzhen Gooloo").

RESPONSE: Paragraph 24 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 24 and therefore denies such

allegations.

25. On information and belief, Gooloo is in the business of manufacturing jump starters in China. Gooloo and Shenzhen Gooloo sell, offer for sale, import, and/or have imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 25 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 25 and therefore denies such allegations.

f) [WITHDRAWN]

26. [WITHDRAWN]

RESPONSE: Paragraph 26 of the Complaint has been withdrawn, thus no response is required.

27. [WITHDRAWN]

RESPONSE: Paragraph 27 of the Complaint has been withdrawn, thus no response is required..

g) Horizon Tool, Inc.

28. On information and belief, Respondent Horizon Tool, Inc. ("Horizon Tool") is a company organized and existing under the laws of the United States, having its principal place of business located at 7918 Industrial Village Road, Greensboro, North Carolina 27409. Horizon Tool is believed to be affiliated with AllStart LLC and Cal-Van & Horizon Tool Inc.

RESPONSE: Paragraph 28 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 28 and therefore denies such allegations.

29. On information and belief, Horizon Tool is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 29 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 29 and therefore denies such allegations.

h) [WITHDRAWN]

30. [WITHDRAWN]

RESPONSE: Paragraph 30 of the Complaint has been withdrawn, thus no response is required.

31. [WITHDRAWN]

RESPONSE: Paragraph 31 of the Complaint has been withdrawn, thus no response is required.

i) [WITHDRAWN]

32. [WITHDRAWN]

RESPONSE: Paragraph 32 of the Complaint has been withdrawn, thus no response is required.

33. [WITHDRAWN]

RESPONSE: Paragraph 33 of the Complaint has been withdrawn, thus no response is required.

j) Nekteck, Inc.

34. On information and belief, Nekteck, Inc. ("Nekteck") is a company organized and existing under the laws of the United States, having its principal place of business located at 421 S Brookhurst Street, Suite 127, Anaheim, California 92804.

RESPONSE: Paragraph 34 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 34 and therefore denies such allegations.

35. On information and belief, Nekteck is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 35 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 35 and therefore denies such allegations.

k) PowerMax Battery (U.S.A.), Inc.

36. On information and belief, PowerMax Battery (U.S.A.), Inc. ("PowerMax") is a company organized and existing under the laws of the United States, having its principal place of business located at 1520 S Grove Avenue, Ontario, California 91761.

RESPONSE: Paragraph 36 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 36 and therefore denies such allegations.

37. On information and belief, PowerMax is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 37 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 37 and therefore denies such allegations.

l) Prime Global Products, Inc.

38. On information and belief, Prime Global Products, Inc. ("Prime Global Products") is a company organized and existing under the laws of the United States, having its principal place of business located at 2220 Airport Industrial Drive, Suite 100, Ball Ground, Georgia 30107.

RESPONSE: Paragraph 38 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 38 and therefore denies such allegations.

39. On information and belief, Prime Global Products is in the business of manufacturing jump starters in China. Prime Global Products sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 39 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 39 and therefore denies such allegations.

m) Shenzhen Carku Technology Co., Ltd.

40. On information and belief, Respondent Shenzhen Carku Technology Co., Ltd. ("Carku") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Building A, Qixing Creative Workshop (Dalang), Lianrun Road, Gaofeng Community, Dalang Street, Longhua New District, China. Carku is believed to be affiliated with MigOwatt Group LLC.

RESPONSE: Paragraph 40 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 40 and therefore denies such allegations.

41. On information and belief, Carku is in the business of manufacturing jump starters in China. Carku sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 41 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 41 and therefore denies such allegations.

n) [WITHDRAWN]

42. [WITHDRAWN]

RESPONSE: Paragraph 42 of the Complaint has been withdrawn, thus no response is required.

43. [WITHDRAWN]

RESPONSE: Paragraph 43 of the Complaint has been withdrawn, thus no response is required.

o) Shenzhen Take Tools Co., Ltd.

44. On information and belief, Respondent Shenzhen Take Tools Co., Ltd. ("Shenzhen Take Tools") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. B714, Niulanqian Building, Minzhi Road, Longhua District, Shenzhen, Guangdong, China 518000.

RESPONSE: Paragraph 44 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 44 and therefore denies such allegations.

45. On information and belief, Shenzhen Take Tools is in the business of manufacturing jump starters in China. Shenzhen Take Tools sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 45 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 45 and therefore denies such allegations.

p) [WITHDRAWN]

46. [WITHDRAWN]

RESPONSE: Paragraph 46 of the Complaint has been withdrawn, thus no response is required.

47. [WITHDRAWN]

RESPONSE: Paragraph 47 of the Complaint has been withdrawn, thus no response is required.

q) Walmart Inc.

48. On information and belief, Walmart Inc. ("Walmart") is a company organized and existing under the laws of the United States, having its principal place of business located at 702 S.W. 8th Street, Bentonville, Arkansas 72716. Walmart is believed to be affiliated with Wal-Mart Stores, Inc.; Sam's West, Inc (d/b/a Sam's Club); and Sam's East, Inc. (d/b/a Sam's Club).

RESPONSE: Paragraph 48 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 48 and therefore denies such allegations.

49. On information and belief, Walmart is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 49 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 49 and therefore denies such allegations.

r) 70mai Co., Ltd.

50. On information and belief, 70mai Co., Ltd. ("70mai") is a company organized and existing under the laws of the United States, having its principal place of business located at Room 2220, Building 2, No. 588, Zixing Road, Minhang District, Shanghai, China.

RESPONSE: Paragraph 50 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 50 and therefore denies such allegations.

51. On information and belief, 70mai is in the business of manufacturing jump starters in China. 70mai sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 51 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 51 and therefore denies such allegations.

2. Boltpower Respondents

a) Anker Innovations Ltd. (HK)

52. On information and belief, Respondent Anker Innovations Ltd. (HK), ("Anker Innovations") is a Hong Kong company organized and existing under the laws of the Hong Kong and has a principal place of business located at Room 1318-19 Hollywood Commercial Center, 610 Nathan Road, Mongkok Kowloon, Hong Kong. Anker Innovations is believed to be affiliated with Anker Technology Co., Ltd. and Anker Technology (UK) Ltd.

RESPONSE: Paragraph 52 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 52 and the section heading above therefore denies such allegations.

53. On information and belief, Anker Innovations is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 53 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 53 and therefore denies such allegations.

b) Arteck Electronic Co., Ltd.

54. On information and belief, Respondent Arteck Electronic Co., Ltd. ("Arteck Electronic") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. 1104-51, Tower B, Jinfengcheng Building, Shennan East Road No. 501, Shenzhen, Guangdong, China 518100.

RESPONSE: Paragraph 54 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 54 and therefore denies such allegations.

55. On information and belief, Arteck Electronic is in the business of manufacturing jump starters in China. Arteck Electronic sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 55 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 55 and therefore denies such allegations.

c) Best Parts, Inc.

56. On information and belief, Respondent Best Parts, Inc. ("Best Parts") is a company organized and existing under the laws of the United States, having its principal place of business located at 123 S Front Street, Memphis, Tennessee 38103-3607.

RESPONSE: Paragraph 56 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 56 and therefore denies such allegations.

57. On information and belief, Best Parts is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 57 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 57 and therefore denies such allegations.

d) [WITHDRAWN]

58. [WITHDRAWN]

RESPONSE: Paragraph 58 of the Complaint has been withdrawn, thus no response is required.

59. [WITHDRAWN]

RESPONSE: Paragraph 59 of the Complaint has been withdrawn, thus no response is required.

e) Deltran USA, LLC

60. On information and belief, Respondent Deltran USA, LLC ("Deltran") is a company organized and existing under the laws of the United States, having its principal place of business located at 801 International Speedway Blvd., DeLand, Florida 32724.

RESPONSE: Paragraph 60 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 60 and therefore denies such allegations.

61. On information and belief, Deltran is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 61 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 61 and therefore denies such allegations.

f) FlyLink Tech Co., Ltd.

62. On information and belief, Respondent FlyLink Tech Co., Ltd. ("FlyLink Tech") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 2 Floor, 9 Building, Hengling Ind. Park Min Zhi Street, Bao'an District, Shenzhen China.

RESPONSE: Paragraph 62 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 62 and therefore denies such allegations.

63. On information and belief, FlyLink Tech is in the business of manufacturing jump starters in China. FlyLink Tech sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 63 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 63 and therefore denies such allegations.

g) [WITHDRAWN]

64. [WITHDRAWN]

RESPONSE: Paragraph 64 of the Complaint has been withdrawn, thus no response is required.

65. [WITHDRAWN]

RESPONSE: Paragraph 65 of the Complaint has been withdrawn, thus no response is required.

h) Guangdong Boltpower Energy Co., Ltd.

66. On information and belief, Respondent Guangdong Boltpower Energy Co., Ltd. ("Boltpower") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 3-6 Floor KelunTe Building No. 5 Ganli Road, Longgang District, Shenzhen City, Guangdong, China. Boltpower is believed to be affiliated with Dongguan Boltpower Co., Ltd. and Hunan Boltpower New Energy Co., Ltd.

RESPONSE: Paragraph 66 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 66 and therefore denies such allegations.

67. On information and belief, Boltpower is in the business of manufacturing jump

starters in China. Boltpower sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: Paragraph 67 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 67 and therefore denies such allegations.

i) [WITHDRAWN]

68. [WITHDRAWN]

RESPONSE: Paragraph 68 of the Complaint has been withdrawn, thus no response is required.

69. [WITHDRAWN]

RESPONSE: Paragraph 69 of the Complaint has been withdrawn, thus no response is required.

j) [WITHDRAWN]

70. [WITHDRAWN]

RESPONSE: Paragraph 70 of the Complaint has been withdrawn, thus no response is required.

71. [WITHDRAWN]

RESPONSE: Paragraph 71 of the Complaint has been withdrawn, thus no response is required.

k) K-Tool International

72. On information and belief, K-Tool International ("K-Tool") is a company organized and existing under the laws of the United States, having its principal place of business located at 45255 Five Mile Road Plymouth, Michigan 48170.

RESPONSE: Paragraph 72 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 72 and therefore denies such allegations.

73. On information and belief, K-Tool is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 73 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 73 and therefore denies such allegations.

l) Lowe's Home Centers, LLC

74. On information and belief, Lowe's Home Centers, LLC ("Lowe's") is a company organized and existing under the laws of the United States, having its principal place of business located at 1000 Lowe's Blvd. Mooresville, North Carolina.

RESPONSE: Paragraph 74 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 74 and therefore denies such allegations.

75. On information and belief, Lowe's is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 75 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 75 and therefore denies such allegations.

m) Matco Tools Corporation

76. On information and belief, Matco Tools Corporation ("Matco") is a company organized and existing under the laws of the United States, having its principal place of business located at 4403 Allen Road Stow, Ohio 44224.

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RESPONSE: Paragraph 76 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 76 and therefore denies such allegations.

77. On information and belief, Matco is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 77 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 77 and therefore denies such allegations.

n) MonoPrice, Inc.

78. On information and belief, Mono Price, Inc. ("MonoPrice") is a company organized and existing under the laws of the United States, having its principal place of business located at 1 Pointe Drive, 4th Floor Brea, California 92821.

RESPONSE: Paragraph 78 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 78 and therefore denies such allegations.

79. On information and belief, MonoPrice is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 79 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 79 and therefore denies such

allegations.

o) National Automotive Parts Association, LLC (d/b/a/ NAPA)

80. On information and belief, National Automotive Parts Association, LLC ("NAPA") (d/b/a/ NAPA) is a company organized and existing under the laws of the United States, having its principal place of business located at 2085 Marietta Blvd Northwest Atlanta, GA 30318. NAPA is believed to be affiliated with Genuine Parts Company, a company organized and existing under the Laws of the United States, having its principal place of business located at 2999 Wildwood Parkway, Atlanta, Georgia 30339.

RESPONSE: Paragraph 80 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 80 and therefore denies such allegations.

81. On information and belief, NAPA is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 81 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 81 and therefore denies such allegations.

p) O'Reilly Respondents

82. On information and belief, O'Reilly Automotive, Inc. ("O'Reilly") is a company organized and existing under the laws of the United States, having its principal place of business located at 233 South Patterson Avenue Springfield, Missouri 65802. O'Reilly is affiliated with three direct or indirect subsidiaries, Respondent Ozark Purchasing, LLC, a Missouri limited liability company having its principal place of business located at 223 South Patterson Springfield, Missouri 65802; Respondent O'Reilly Automotive Stores, Inc., a Missouri corporation having its principal place of business located at 233 South Patterson Springfield, Missouri 65802; and Respondent O'Reilly Auto Enterprises, LLC, a Delaware limited liability company having its principal place of business located at 233 South Patterson Springfield, Missouri 65802 (collectively, the "O'Reilly Respondents").

RESPONSE: Paragraph 82 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 82 and therefore denies such allegations.

83. On information and belief, the O'Reilly Respondents are in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 83 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 83 and therefore denies such allegations.

q) [WITHDRAWN]

84. [WITHDRAWN]

RESPONSE: Paragraph 84 of the Complaint has been withdrawn, thus no response is required.

85. [WITHDRAWN]

RESPONSE: Paragraph 85 of the Complaint has been withdrawn, thus no response is required.

r) Schumacher Power Technology Ltd. & Schumacher Electric Corp.

86. On information and belief, Respondent Schumacher Power Technology Ltd. ("Schumacher") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. 30, Century Road, Binhai County, Yancheng, Jiangsu, China, 215127. Schumacher is believed to be affiliated with Schumacher Electric Corp.

RESPONSE: Paragraph 86 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 86 and therefore denies such allegations.

87. On information and belief, Schumacher is in the business of manufacturing jump

starters in China. Schumacher sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 87 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 87 and therefore denies such allegations.

87a) On information and belief, Respondent Schumacher Electric Corp. ("Schumacher") is a company organized and existing under the laws of the United States, having its principal place of business located at 801 E Business Center Drive Mount Prospect, Illinois 60056.

RESPONSE: Paragraph 87a of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 87a and therefore denies such allegations

87b) On information and belief, Schumacher is in the business of manufacturing jump starters in China. Schumacher sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 87b of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 87b and therefore denies such allegations

s) [WITHDRAWN]

88. [WITHDRAWN]

RESPONSE: Paragraph 88 of the Complaint has been withdrawn, thus no response is required.

89. On information and belief, Shenzhen Chic Electrics is in the business of manufacturing jump starters in China. Shenzhen Chic Electrics sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims

of the Asserted Patents.

RESPONSE: Paragraph 89 of the Complaint has been withdrawn, thus no response is required.

t) Shenzhen Dingjiang Technology Co., Ltd. LLLC (d/b/a/ Shenzhen Topdon Technology Co., Ltd. and Topdon Technology Co., Ltd.)

90. On information and belief, Respondent Shenzhen Dingjiang Technology Co., Ltd. LLLC (d/b/a/ Shenzhen Topdon Technology Co., Ltd. and Topdon Technology Co., Ltd.) ("Shenzhen Dingjiang Technology") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Unit 2005 20/F, No.3040 Xinghai Avenue, Qianhai Shimao Tower, Qianhai Shenzhen-Hong Kong Cooperation Zone, Shenzhen, P.R. China.

RESPONSE: Paragraph 90 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 90 and therefore denies such allegations.

91. On information and belief, Shenzhen Dingjiang Technology is in the business of manufacturing jump starters in China. Shenzhen Dingjiang Technology sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: Paragraph 91 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 91 and therefore denies such allegations.

u) [WITHDRAWN]

92. [WITHDRAWN]

RESPONSE: Paragraph 92 of the Complaint has been withdrawn, thus no response is required.

93. [WITHDRAWN]

RESPONSE: Paragraph 93 of the Complaint has been withdrawn, thus no response is required.

v) [WITHDRAWN]

94. [WITHDRAWN]

RESPONSE: Paragraph 94 of the Complaint has been withdrawn, thus no response is required.

95. [WITHDRAWN]

RESPONSE: Paragraph 95 of the Complaint has been withdrawn, thus no response is required.

w) Shenzhen Mediatek Tong Technology Co., Ltd.

96. On information and belief, Respondent Shenzhen Mediatek Tong Technology Co., Ltd. ("Shenzhen Mediatek") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 3A-E, Qianyu Tong Building, Qingji Road, Longhua Street, Longhua New District, Shenzhen, China.

RESPONSE: Paragraph 96 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 96 and therefore denies such allegations.

97. On information and belief, Shenzhen Mediatek is in the business of manufacturing jump starters in China. Shenzhen Mediatek sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents and Asserted Trademarks.

RESPONSE: Paragraph 97 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 97 and therefore denies such allegations.

x) [WITHDRAWN]

98. [WITHDRAWN]

RESPONSE: Paragraph 98 of the Complaint has been withdrawn, thus no response is required.

99. [WITHDRAWN]

RESPONSE: Paragraph 99 of the Complaint has been withdrawn, thus no response is required.

y) Shenzhen Valuelink E-Commerce Co., Ltd.

100. On information and belief, Respondent Shenzhen Valuelink E-Commerce Co., Ltd. ("Shenzhen Valuelink") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at 2nd Two-way ChangJiangPu, Heao Community, HengGang Street Office, Longgang District, Shenzhen, China 518000.

RESPONSE: Paragraph 100 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 100 and therefore denies such allegations.

101. On information and belief, Shenzhen Valuelink is in the business of manufacturing jump starters in China. Shenzhen Valuelink sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 101 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 101 and therefore denies such allegations.

z) [WITHDRAWN]

102. [WITHDRAWN]

RESPONSE: Paragraph 102 of the Complaint has been withdrawn, thus no response is required.

103. [WITHDRAWN]

RESPONSE: Paragraph 103 of the Complaint has been withdrawn, thus no response is required.

aa) Tii Trading Inc.

104. On information and belief, Tii Trading Inc. ("Tii Trading") is a company organized and existing under the laws of the United States, having its principal place of business located at 13200 Brooks Drive, Suite F, Baldwin Park, California 91706.

RESPONSE: Paragraph 104 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 104 and therefore denies such allegations.

105. On information and belief, Tii Trading is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 105 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 105 and therefore denies such allegations.

bb) Zhejiang Quingyou Electronic Commerce Co., Ltd.

106. On information and belief, Zhejiang Quingyou Electronic Commerce Co., Ltd. ("Zhejiang Quingyou Electronic") is a company organized and existing under the laws of the United States, having its principal place of business located at Room 266-270, Building 7, No. 253, Tinglan Street, Qiaosi Street, Yuhang District, Hangzhou, Zhejiang, China.

RESPONSE: Paragraph 106 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 106 and therefore denies such allegations.

107. On information and belief, Zhejiang Quingyou Electronic is in the business of manufacturing jump starters in China. Zhejiang Quingyou Electronic sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 107 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 107 and therefore denies such allegations.

3. Smartech Respondents

a) Smartech Products, Inc.

108. On information and belief, Smartech Products, Inc. ("Smartech") is a company organized and existing under the laws of the United States, having its principal place of business located at 8700 Larkin Road, Suite B, Savage, Maryland 20763.

RESPONSE: Paragraph 108 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 108 and therefore denies such allegations.

109. On information and belief, Smartech is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 109 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 109 and therefore denies such allegations.

4. Weego Respondents

a) Shenzhen Jieruijia Technology Co., Ltd.

110. On information and belief, Respondent Shenzhen Jieruijia Technology Co., Ltd. ("Shenzhen Jieruijia") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at No. 8 Mu Dun Road, No. 1 Industrial Zone, Lou Cun Community, Gong Ming, Guagn Ming District, Shenzhen City, China.

RESPONSE: Paragraph 110 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 110 and therefore denies such allegations.

111. On information and belief, Shenzhen Jieruijia is in the business of manufacturing jump starters in China. Shenzhen Jieruijia sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 111 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 111 and therefore denies such allegations.

b) Paris Corporation

112. On information and belief, Paris Corporation ("Paris Corporation") is a company organized and existing under the laws of the United States, having its principal place of business located at 800 Highland Drive Westhampton, New Jersey 08060.

RESPONSE: Paragraph 112 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 112 and therefore denies such allegations.

113. On information and belief, Paris Corporation is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 113 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 113 and therefore denies such allegations.

5. Winplus Respondents

a) [WITHDRAWN]

114. [WITHDRAWN]

RESPONSE: Paragraph 114 of the Complaint has been withdrawn, thus no response is required.

115. [WITHDRAWN]

RESPONSE: Paragraph 115 of the Complaint has been withdrawn, thus no response is required.

b) Winplus North America, Inc.

116. On information and belief, Winplus North America, Inc. ("Winplus North America") is a company organized and existing under the laws of the United States, having its principal place of business located at 2975 Red Hill Ave, Suite 100, Costa Mesa, California 92626. Winplus North America is affiliated with one sister entity, ADC Solutions Auto, LLC d/b/a/ Type-S and one direct subsidiary, Winplus NA, LLC, both having their principal place of business located at 2975 Red Hill Ave, Suite 100, Costa Mesa, California 92626 (collectively, the "Winplus entities").

RESPONSE: Paragraph 116 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 116 and therefore denies such allegations.

117. On information and belief, Winplus North America and the Winplus entities are in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 117 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 117 and therefore denies such allegations.

6. Great Neck Respondents

a) AutoZone, Inc.

118. On information and belief, Respondent AutoZone, Inc. ("AutoZone") is a company organized and existing under the laws of the United States, having its principal place of business located at 123 South Front Street, Memphis, Tennessee 38103.

RESPONSE: Paragraph 118 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 118 and therefore denies such allegations.

119. On information and belief, AutoZone is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 119 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 119 and therefore denies such allegations.

b) Great Neck Saw Manufacturers, Inc.

120. [WITHDRAWN]

RESPONSE: Paragraph 120 of the Complaint has been withdrawn, thus no response is required.

121. Great Neck Saw Manufacturers, Inc., ("Great Neck") is a company organized and existing under the laws of the United States, having its principal place of business located at 165 East 2nd Street, Mineola, New York 11501.

RESPONSE: Paragraph 121 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 121 and therefore denies such

allegations.

122. On information and belief, Great Neck sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 122 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 122 and therefore denies such allegations.

7. ThiEye Respondents

a) [WITHDRAWN]

123. [WITHDRAWN]

RESPONSE: Paragraph 123 of the Complaint has been withdrawn, thus no response is required.

124. [WITHDRAWN]

RESPONSE: Paragraph 124 of the Complaint has been withdrawn, thus no response is required.

b) ThiEye Technologies Co., Ltd.

125. On information and belief, Respondent ThiEye Technologies Co., Ltd. ("ThiEye Technologies") is a Chinese corporation that is organized and existing under the laws of China and has a principal place of business located at Room 405, 4th Floor, Building B, Bantian International Center, Longgang District, China.

RESPONSE: Paragraph 125 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 125 and therefore denies such allegations.

126. On information and belief, ThiEye Technologies is in the business of manufacturing jump starters in China. ThiEye Technologies sells, offers for sale, imports, and/or has imported into the United States, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 126 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 126 and therefore denies such allegations.

8. Energen/ Performance Tool Respondents

a) Best Buy Co., Inc.

127. On information and belief, Respondent Best Buy Co., Inc. ("Best Buy") is a company organized and existing under the laws of the United States, having its principal place of business located at 7601 Penn Avenue, South Richfield, Minnesota 552423.

RESPONSE: Paragraph 127 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 127 and therefore denies such allegations.

128. On information and belief, Best Buy is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 128 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 128 and therefore denies such allegations.

b) [WITHDRAWN]

129. [WITHDRAWN]

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RESPONSE: Paragraph 129 of the Complaint has been withdrawn, thus no response is required.

130. [WITHDRAWN]

RESPONSE: Paragraph 130 of the Complaint has been withdrawn, thus no response is required.

c) Energen, Inc.

131. On information and belief, Respondent Energen, Inc. ("Energen") is a company organized and existing under the laws of the United States, having its principal place of business located at 17008 Evergreen Place Unit B, City of Industry, California 91745.

RESPONSE: Paragraph 131 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 131 and therefore denies such allegations.

132. On information and belief, Energen is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 132 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 132 and therefore denies such allegations.

d) [WITHDRAWN]

133. [WITHDRAWN]

RESPONSE: Paragraph 133 of the Complaint has been withdrawn, thus no response is required.

134. [WITHDRAWN]

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RESPONSE: Paragraph 134 of the Complaint has been withdrawn, thus no response is required.

9. Halo Respondents

a) Halo2Cloud, LLC

134a) On information and belief, Respondent Halo2Cloud, LLC ("Halo2Cloud") is a company organized and existing under the laws of the United States, having its principal place of business located at 6 Central Row, Hartford, Connecticut 06103.

RESPONSE: Paragraph 134a of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 134a and therefore denies such allegations.

134b) On information and belief, Halo2Cloud is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 134b of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 134b and therefore denies such allegations.

b) QVC, Inc.

134c) On information and belief, QVC, Inc. ("QVC") is a company organized and existing under the laws of the United States, having its principal place of business located at 250 Dove Court Santa Paula, California 93060.

RESPONSE: Respondent admits that it is a company organized and existing under the laws of the State of Delaware. Respondent denies that it maintains its principal place of business at 250 Dove Court, Santa Paula, California 93060. Respondent admits that it maintains its principal

place of business at 1200 Wilson Drive, West Chester, Pennsylvania 19380.

134d) On information and belief, QVC is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Respondent admits that it sells certain products, including portable jump starters, within the United States after importation. Respondent specifically denies that any products imported or sold by Respondent infringe any valid or enforceable claim of the Asserted Patents.

c) ZAGG Inc

134e) On information and belief, ZAGG Inc ("Zagg") is a company organized and existing under the laws of the United States, having its principal place of business located at 910 West Legacy Center Way, Suite 500, Midvale, Utah 84047.

RESPONSE: Paragraph 134e of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 134e and therefore denies such allegations.

134f) On information and belief, ZAG is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 134f of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 134f and therefore denies such allegations.

10. Clore Respondents

134g) On information and belief, Respondent Clore Automotive, LLC ("Clore Automotive") is a company organized and existing under the laws of the United States, having its principal place of business located at 8735 Rosehill Suite 220, Lenexa, Kansas 66215.

RESPONSE: Paragraph 134g of the Complaint is not directed at Respondent, thus no response

is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 134g and therefore denies such allegations.

134h) On information and belief, Clore Automotive is in the business of importing and/or selling within the United States after importation, inter alia, jump starters that infringe one or more claims of the Asserted Patents.

RESPONSE: Paragraph 134h of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 134h and therefore denies such allegations.

III. THE PRODUCTS AT ISSUE

135. The products at issue are portable battery jump starter packs that allow users to safely jump start cars, boats, motorcycles, and more without connecting to another vehicle. The Accused Products and components thereof in this matter include safety features claimed by Complainant's Asserted Patents that prevent injury to the user and damage to the battery being jump started.

RESPONSE: Respondent admits that the products at issue are portable battery jump starter packs that are compatible with a variety of vehicles and do not require connection to a secondary vehicle to function. Respondent further admits that the Accused Products and associated components include safety features intended to prevent injury to the user and damage to the battery being charged. Respondent denies any remaining allegations in Paragraph 135.

136. Since the early days of automobiles, the prevalent method to recharge a dead car battery has been through the use of "jumper cables," where two cables are run from a live battery in a running vehicle to a dead battery of a second vehicle. The many problems associated with jumper cables are well known, including the fact that a second car with a live battery is needed to perform a jump start, and the danger of sparking and short circuits, especially when the cables from the live battery to the dead battery are misconnected (referred to as "reverse polarity") or not fully connected.

RESPONSE: Respondent admits that, prior to the advent of portable battery jump starting

technology, "jumper cables" were utilized to transfer charge from one battery to another. To the extent Paragraph 136 contains legal conclusions, no response is required. Respondent denies all remaining allegations of Paragraph 136.

137. Numerous efforts to improve the jump-starting process have been undertaken over the years, most of which have had significant deficiencies such as lack of portability or failure to solve safety problems and did not achieve significant popularity.

RESPONSE: To the extent Paragraph 137 contains legal conclusions, no response is required. Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 137 and therefore denies such allegations.

138. The advent of lithium-ion batteries has permitted the introduction of compact jump starters that do not require the use of a second vehicle, providing consumer convenience as well as certain safety advantages over prior jump-starting devices.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 138 and therefore denies such allegations.

A. Complainant's Jump Starters

139. NOCO has successfully developed innovative automobile battery products in the United States for over 100 years. In 2014, NOCO introduced the Boost® lithium jump starter, which incorporates the patented safety features described herein. A photograph of one model of NOCO's Boost® jumping a dead battery is shown below, and a video demonstrating how the Boost® operates can be found at https://www.youtube.com/watch?v=QULcgAZUs0Y

[image omitted]

Fig. 1- NOCO Boost® Pro™ (GB150)- 3,000A Jump Starter

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 139 and any corresponding footnotes and therefore denies such allegations.

140. NOCO currently offers a range of products for the charging, jump-starting, and storage of vehicle batteries. The products at issue here include the entire line of NOCO Boost® jump starters, namely, the Boost® Sport™, Boost® Plus™, Boost® XL™, Boost® HD™, Boost®

Pro™, and Boost® Max™. *See* Ex. 8.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 140 and its corresponding footnotes and therefore denies such allegations.

141. The NOCO Boost® jump starters are ultra-portable, lightweight, and compact. They outperform traditional lead-acid battery booster packs at a fraction of the size and weight. The Boost® jump starters provide users a safe and easy-to-use car battery jump starter pack without the worry of incorrect connections or sparks. Boost® jump starters safely connect to any 12-volt vehicle battery due to NOCO's mistake-proof design featuring spark-proof technology and reverse polarity protection. All Boost® jump starters also feature a 2.1A USB output port to power any USB device, and an LED flashlight with 7 light modes, including SOS and Emergency Strobe. *See* Ex. 8. NOCO offers six Boost® models, which provide a range from 500A to 20,000A for a wide variety of vehicle batteries and applications.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 141 and any exhibits referenced therein and therefore denies such allegations.

142. Since its introduction, the Boost® has become known for its safety, ease of use, and reliability, among other features. As a result, the Boost® has enjoyed tremendous popularity, becoming one of the, if not the, market-leading compact lithium jump starters in the United States.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 142 and therefore denies such allegations.

B. Respondents' Jump Starters

143. On information and belief, the Accused Products include portable battery jump starters that are manufactured in China and then imported into the United States. These products incorporate the patented technology claimed in the Asserted Patents. Examples of infringing jump starter models offered by three of the Respondents are shown below:

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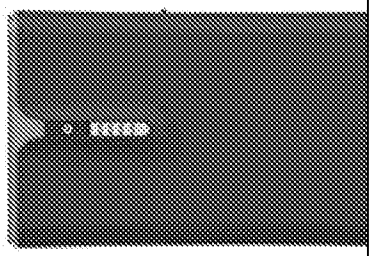
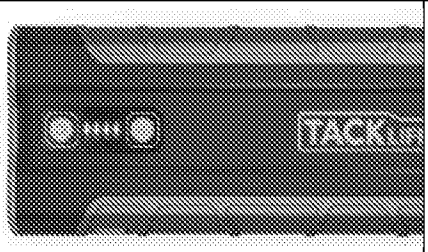
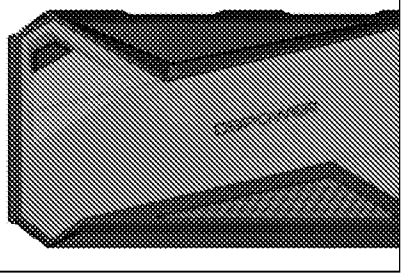
Gooloo GP1500	Tacklife T8 Max	DB Power DJS50
		

Fig. 2- Examples of Accused Products

RESPONSE: Paragraph 143 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 143 and therefore denies such allegations. Respondent specifically denies that any products imported or sold by Respondent infringe any valid or enforceable claim of the Asserted Patents.

144. It is often difficult to determine the source of the Accused Products, as the Chinese manufacturers of these products frequently distribute them through several entities, even when the products are made in the same facility. There have also been instances of the Chinese manufacturers changing their names or using trading companies to ship the products to the United States. For these reasons, there are many instances in which neither the shipping documents nor the product packaging indicate the manufacturer of the product.

RESPONSE: Paragraph 144 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 144 and therefore denies such allegations. Respondent specifically denies that it engages in the activities described in Paragraph 144 and further denies that any products imported or sold by Respondent infringe any valid or enforceable claim of the Asserted Patents.

145. Respondents target customers in the United States through their own websites and also sell the accused jump starters via online marketplaces, including Amazon. Numerous Respondents' Accused Products are also sold in brick-and-mortar retail locations in the United

States and/or on the websites of these retailers.

RESPONSE: Paragraph 145 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 145 and therefore denies such allegations. Respondent specifically denies that any products imported or sold by Respondent infringe any valid or enforceable claim of the Asserted Patents.

IV. THE ASSERTED PATENTS

146. The Asserted Patents generally relate to portable battery jump starters and safety features contained therein. These jump starters can be used to jump start the batteries of many vehicles including cars, trucks, boats, and motorcycles.

RESPONSE: Respondent admits that the Asserted Patents purport to generally relate to jump starters and safety features. Respondent denies the remaining allegations of Paragraph 146.

147. The identification, ownership, non-technical description, foreign counterparts, and licensees for each Asserted Patent are identified below.

RESPONSE: Paragraph 147 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 147 and therefore denies such allegations.

A. U.S. Patent No. 9,007,015

1. Identification of the Patent and Ownership

148. The '015 Patent, titled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection" issued on April 15, 2015, naming Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Ex. 1 (Certified copy of '015 Patent) at 1. The '015 Patent is based on U.S. Patent Application No. 14/325,938 filed on July 8, 2014. *Id.* The '015 Patent is a continuation of Application No. PCT/US2014/045343, filed on July 3, 2014. The '015 Patent will expire on July 3, 2034.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of the '015 Patent and therefore denies such allegations. Respondent admits that the '015 Patent appears, on its face, to be titled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection." Respondent admits that Paragraph 148 references Exhibit 1, which appears, on its face, to be a copy of the '015 patent. Respondent admits that the '015 Patent appears, on its face, to include certain "Related U.S. Application Data." Respondent denies that the claims of the '015 Patent are valid and enforceable. To the extent Paragraph 148 contains legal conclusions, no response is required. To the extent a response is required, Respondent lacks knowledge or information to form a belief as to the remaining allegations of Paragraph 148 and therefore denies such allegations.

149. This Complaint is accompanied by a certified copy of the prosecution history for the '015 Patent and the references cited therein. *See* Appx. A1 and A2.

RESPONSE: Respondent admits that NOCO has included what appears to be a certified copy of the prosecution history of the '015 Patent and the references cited therein. Such document speaks for itself. The remaining allegations of Paragraph 149 are not directed to Respondent and therefore no response is required. To the extent a response is required, Respondent lacks knowledge or information to form a belief as to the remaining allegations of Paragraph 149 and therefore denies such allegations.

150. NOCO owns by assignment all rights, title, and interest in the '015 Patent. *See* Ex. 6.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership by assignment of all rights, title, and interest in the '732 Patent and therefore denies such allegations.

2. Non-Technical Description of the Patent

151. The '015 Patent relates to an improved portable jump starter incorporating a rechargeable lithium-ion battery and a microcontroller. The '015 Patent describes a novel apparatus that incorporates a power switch actuated by a microcontroller such that power will be delivered from the lithium-ion power pack to the output port only when the battery is connected to the output port and only when the battery is connected with the proper polarity of positive and negative terminals. This solves the problem of sparking or potential damage to the battery and/or bodily injury when the jumper terminals or clamps of the cables were inadvertently brought in contact with each other, or when positive and negative terminals were connected to the opposite polarity terminals in the vehicle to be jumped.

RESPONSE: Respondent admits that the allegations of Paragraph 151 are intended to be "non-technical." Respondent specifically denies that the '015 Patent describes a "novel apparatus," and denies the suggestion that the '015 Patent "solves" a problem that had not already been solved by others. To the extent Paragraph 151 contains legal conclusions, no response is required. To the extent a response is required, denied.

152. The '015 Patent has 23 claims, 1 of which is an independent claim. Complainant is asserting claims 1, 4, 11, 14, 18, 19 and 21.

RESPONSE: The allegations of Paragraph 152 are not directed to Respondent and therefore no response is required. To the extent a response is required, denied.

3. Foreign Counterparts of the Patent

153. The following is a list of current foreign patents and foreign applications that are presently understood to correspond or otherwise relate to the '015 Patent:

- CA2,916,782 (Canada)
- GB2527858 (United Kingdom)
- DE10204114997B4 (Germany)
- (Australia) Patent Application (Approved) No. 20201223
- (Germany) Patent Application No. 102014020005.1
- (Germany) Patent Application No. 102014020004.3

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the

allegations of Paragraph 153 and therefore denies such allegations.

154. NOCO owns all right, title, and interest in and to each of these foreign patents and applications, there are no other foreign patents corresponding to the '015 Patent, and there are no other pending, rejected, or abandoned foreign patent applications corresponding to the '015 Patent.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of all rights, title, and interest in the '015 Patent and therefore denies such allegations.

4. Licensees to the Patent

155. All licensees to the '015 Patent are identified in Confidential Ex. 5C. There are no other licensees relating to the '015 Patent.

RESPONSE: Respondent admits that Confidential Exhibit 5C appears, on its face, to be the licensees of the '015 Patent. Respondent lacks knowledge or information sufficient to form a belief as to the remaining allegations of Paragraph 155 and therefore denies such allegations.

B. U.S. Patent No. 10,604,024

1. Identification of the Patent and Ownership

156. The '024 Patent, titled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection" issued on March 31, 2020 naming Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Ex. 2 (Certified copy of '024 Patent) at 1. The '024 Patent is based on U.S. Patent Application No. 15/691,884 filed on Aug. 31, 2017. *Id.* The '024 Patent is a continuation of Application No. 14/619,655, filed February 11, 2015, now U.S. Patent No. 9,770,992, which claims priority to PCT/US2014/045434, filed July 3, 2014. The '024 Patent will expire on July 3, 2034.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of the '024 Patent and therefore denies such allegations. Respondent admits that the '024 Patent appears, on its face, to be titled "Portable Vehicle Battery Jump Start Apparatus with Safety Protection." Respondent admits that Paragraph 156 references Exhibit 2, which appears, on its face, to be a copy of the '024 patent. Respondent admits that the '024

Patent appears, on its face, to include certain "Related U.S. Application Data." Respondent denies that the claims of the '024 Patent are valid and enforceable. To the extent Paragraph 156 contains legal conclusions, no response is required. To the extent a response is required, Respondent lacks knowledge or information to form a belief as to the remaining allegations of Paragraph 156 and therefore denies such allegations.

157. This Complaint is accompanied by a certified copy of the prosecution history for the '024 Patent and the references cited therein. *See* Appx. B1 and B2.

RESPONSE: Respondent admits that the Complaint is accompanied by what appears to be certified copies of the prosecution history for the '024 Patent and the references cited therein. The remaining allegations of Paragraph 157 are not directed at Respondent and therefore no response is required. To the extent a response is required, denied.

158. NOCO owns by assignment all rights, title, and interest in the '024 Patent. See Ex. 7.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of all rights, title, and interest in the '024 Patent and therefore denies such allegations.

2. Non-Technical Description of the Patent

159. The '024 Patent relates to an improved portable jump starter incorporating a rechargeable lithium-ion battery and a microcontroller. The '024 Patent is a continuation of the '015 Patent but claims inventive features not claimed in that patent, including: the device being turned on when the microcontroller receives *simultaneous* signals from the sensors indicating that the device's battery clamps are connected to the vehicle battery proper polarity; and the device being *turned off* when the microcontroller receives signals from the sensors indicating that the device's battery clamps have become disconnected from the vehicle battery and/or an improper polarity condition.

RESPONSE: Respondent admits that the allegations of Paragraph 159 are intended to be "non-technical." Respondent specifically denies that the '024 Patent "claims inventive features." To

the extent Paragraph 159 contains legal conclusions, no response is required. To the extent a response is required, denied.

160. The '024 Patent has 30 claims, 3 of which are independent claims. Complainant is asserting claims 1, 4, 5, 6, 16, 19, 23, 24, 26, 29, 30.

RESPONSE: Respondent lacks knowledge and information sufficient to form a belief as to the allegations of Paragraph 160 and therefore denies the same.

3. Foreign Counterparts of the Patent

161. *See* Section IV.A.3, *supra*.

RESPONSE: The allegations of Paragraph 161 are not directed to Respondent and therefore no response is required. To the extent a response is required, denied.

4. Licensees to the Patent

162. All licensees to the '024 Patent are identified in Confidential Ex. 5C. There are no other licensees relating to the '024 Patent.

RESPONSE: Respondent lacks knowledge and information sufficient to form a belief as to the allegations of Paragraph 162 and therefore denies the same.

V. THE ASSERTED TRADEMARKS

A. U.S. Trademark Reg. No. 4,811,656

163. The federal registration of the ULTRASAFE mark, Reg. No. 4,811,656, issued on September 15, 2015 to NOCO. NOCO has continuously used this mark in commerce since at least August 2014 for its jump starters (Classes 021 023, 026, 036, and 038.). Affidavits have been filed pursuant to Section 8 and 15 of the Lanham Act, 15 U.S.C.§§ 1058 and 1065, and this registration is incontestable. A copy of the Certificate of Registration for the Registered Trademark is attached hereto as Exhibit 3.

RESPONSE: Respondent admits that the federal registration for the ULTRASAFE MARK, Reg. No. 4,811,656 appears to have been issued on September 15, 2015 to NOCO. Respondent further admits that NOCO has attached what appears to be, on its face, a Certificate of

Registration for the Registered Trademark as Exhibit 3. Respondent lacks knowledge and information sufficient to form a belief as to the remaining allegations of Paragraph 163 and therefore denies the same.

164. Pursuant to Commission Rule 210.12(d), NOCO will file a certified copy of the prosecution history of the ULTRASAFE trademark for U.S. Trademark Reg. No. 4,811,656, as Appendix C.

RESPONSE: Respondent lacks knowledge and information sufficient to form a belief as to the remaining allegations of Paragraph 164 and any corresponding footnotes and therefore denies the same.

B. U.S. Trademark Reg. No. 4,811,749

165. The federal registration of the SAFELY JUMP START A DEAD BATTERY IN SECONDS mark, Reg. No. 4,811,749, issued on September 15, 2015 to NOCO. NOCO has continuously used this mark in commerce since at least August 2014 for its jump starters (Classes 021, 023, 026, 036, 038, 100, 101, and 102). Affidavits have been filed pursuant to Section 8 and 15 of the Lanham Act, 15 U.S.C. §§ 1058 and 1065, and this registration is incontestable. A copy of the Certificate of Registration for the Registered Trademark is attached hereto as Exhibit 4.

RESPONSE: Respondent admits that the federal registration for the SAFELY JUMP START A DEAD BATTERY IN SECONDS mark, Reg. No. 4,811,749 appears to have been issued on September 15, 2015 to NOCO. Respondent further admits that NOCO has attached what appears to be, on its face, a Certificate of Registration for the Registered Trademark as Exhibit 4. Respondent lacks knowledge and information sufficient to form a belief as to the remaining allegations of Paragraph 165 and therefore denies the same.

166. Pursuant to Commission Rule 210.12(d), NOCO will file a certified copy of the prosecution history of the "Safely Jump Start a Dead Battery in Seconds" trademark for U.S. Trademark Reg. No. 4,811,749, as Appendix D.

RESPONSE: Respondent lacks knowledge and information sufficient to form a belief as to the remaining allegations of Paragraph 166 and any corresponding footnotes and therefore denies the

same.

VI. UNFAIR ACTS OF THE PROPOSED RESPONDENTS

A. Infringement of the Asserted Patents

167. On information and belief, Respondents, without authorization, have been and still are infringing each of the Asserted Patents in the United States. Respondents' unlawful and unfair acts include the importation into the United States, sale for importation into the United States, or sale within the United States after importation of the infringing Accused Products. Respondents have violated, and continue to violate, Section 337 of the Tariff Act of 1930 in view of U.S. patent laws. Respondents are not licensed under the Asserted Patents.

RESPONSE: To the extent Paragraph 167 contains legal conclusions, no response is required. Respondent specifically denies that the products that it imports or sells infringe, directly or otherwise, literally or under the doctrine of equivalents, any valid and enforceable claim of the Asserted Patents. Respondent lacks knowledge or information sufficient to form a belief as to the remaining allegations of Paragraph 167 and therefore denies such allegations.

168. Specifically, NOCO asserts that the Respondents directly infringe, literally or under the doctrine of equivalents, at least the following independent claims of the Asserted Patents, in violation of 35 U.S.C. §§ 271(a) and Section 337 (a)(1)(B)(i):

Claim Chart	'015 Patent	'024 Patent
Claim Chart 01-Carku	1	1, 29, 30
Claim Chart 02- Boltpower	1	1, 29, 30
Claim Chart 03- Smartech	1	1, 29, 30
Claim Chart 04-Weego	1	1, 29, 30
Claim Chart 05-Winplus	1	1, 29, 30
Claim Chart 06- Great Neck	1	
Claim Chart 07- ThiEye	1	1, 29, 30
Claim Chart 08- Energen/ Performance	1	1, 29, 30
Claim Chart 09- HALO	1	1, 29, 30
Claim Chart 10- Clore	1	

Table 2. Asserted Independent Claims Infringed by Proposed Respondents

RESPONSE: To the extent Paragraph 168 contains legal conclusions, no response is required. Respondent specifically denies that the products that it imports or sells infringe, directly or

otherwise, literally or under the doctrine of equivalents any valid and enforceable claim of the Asserted Patents. Respondent lacks knowledge or information sufficient to form a belief as to the remaining allegations of Paragraph 168 and therefore denies such allegations.

169. For purposes of assessing infringement, the Accused Products are divided into groups based on suspected manufacturer. The claim charts are designated Claim Chart 01 through Claim Chart 10, and the Accused Products within each design group are set forth on Exhibit 9. The Accused Products within each design group share a common design, at least with respect to the portions relevant to the infringement analysis of the independent claims of the '015 and '024 Patent claims. Each of the Respondents imports, sells for importation, and/or sells within the United States after importation at least one of the Accused Products and therefore directly infringes, literally or under the doctrine of equivalents, one or more of claims 1, 4, 11, 14, 18, 19, 21 of the '015 Patent and/or one or more of claims 1, 4, 5, 6, 16, 19, 23, 24, 26, 29, 30 of the '024 Patent with respect to such Respondent's Accused Products.

RESPONSE: Respondent denies that the products that it imports or sells infringe, directly or otherwise, literally or under the doctrine of equivalents any valid and enforceable claim of the Asserted Patents. Respondent lacks knowledge or information sufficient to form a belief as to the remaining allegations of Paragraph 169 and therefore denies such allegations.

1. Claim Chart 01- Carku Accused Products

a) Carku Design

170. The Accused Products in Claim Chart 01 ("Carku Design") are lithium battery powered jump starters having a cable assembly that includes a relay and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an optocoupler sensor. The Carku Design Accused Products are offered by numerous sellers under multiple brand names. On information and belief, the Carku Design Accused Products are manufactured by at least Respondent Carku. The Tacklife T8 Pro model jump starter is representative of the Carku Design Accused Products.

RESPONSE: Paragraph 170 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 170 and therefore denies such allegations.

b) Infringement of the '015 Patent

171. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Carku Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Carku Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Carku Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 171 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 171 and therefore denies such allegations.

172. A claim chart comparing independent claim 1 of the '015 Patent to the representative Carku Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 111.

RESPONSE: Paragraph 172 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 172 and therefore denies such allegations.

c) Infringement of the '024 Patent

173. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Carku Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Carku Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Carku Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 173 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 173 and therefore denies such

allegations.

174. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Carku Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 111.

RESPONSE: Paragraph 174 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 174 and therefore denies such allegations.

2. Claim Chart 02- Boltpower Accused Products

a) Boltpower Design

175. The Accused Products in Claim Chart 02 ("Boltpower Design") are lithium battery powered jump starters that includes a relay and two sensors. The Boltpower Design Accused Products are offered by numerous sellers under multiple brand names. The BEATIT D11, Lemsir V1, and BEATIT D10 Pro model jump starters are representative of the three designs of Accused Products manufactured by Boltpower.

RESPONSE: Paragraph 175 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 175 and therefore denies such allegations.

b) Infringement of the '015 Patent

176. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Boltpower Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Boltpower Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Boltpower Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 176 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 176 and therefore denies such allegations.

177. A claim chart comparing independent claim 1 of the '015 Patent to the representative Boltpower Design Accused Products, and including photographs and drawings where applicable, is attached as Ex. 112.

RESPONSE: Paragraph 177 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 177 and therefore denies such allegations.

c) Infringement of the '024 Patent

178. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Boltpower Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Boltpower Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Boltpower Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 178 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 178 and therefore denies such allegations.

179. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Boltpower Design Accused Products, and including photographs and drawings where applicable, is attached as Ex. 112.

RESPONSE: Paragraph 179 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 179 and therefore denies such allegations.

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3. Claim Chart 03- Smartech Accused Products

a) Smartech Design

180. The Accused Products in Claim Chart 03 ("Smartech Design") are lithium battery powered jump starters offered under the SMARTECH brand and have a cable assembly that includes a relay and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an operational amplifier sensor. The SMARTECH JS-10000 model jump starter is representative of the Smartech Design Accused Products.

RESPONSE: Paragraph 180 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 180 and therefore denies such allegations.

b) Infringement of the '015 Patent

181. On information and belief, select Respondents, including Respondent Smartech, import, sell for importation, and/or sell within the United States after importation the Design 05 Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Smartech Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Smartech Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 181 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 181 and therefore denies such allegations.

182. A claim chart comparing independent claim 1 of the '015 Patent to the representative Smartech Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 113.

RESPONSE: Paragraph 182 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

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sufficient to form a belief as to the allegations of Paragraph 182 and therefore denies such allegations.

c) Infringement of the '024 Patent

183. On information and belief, select Respondents, including Respondent Smartech, import, sell for importation, and/or sell within the United States after importation the Smartech Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Smartech Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Smartech Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 183 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 183 and therefore denies such allegations.

184. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Smartech Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 113.

RESPONSE: Paragraph 184 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 184 and therefore denies such allegations.

4. Claim Chart 04- Weego Accused Products

a) Weego Design

185. The Accused Products in Claim Chart 04 ("Weego Design") are lithium battery powered jump starters offered under the WEEGO brand and have a cable assembly that includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an optocoupler sensor. The WEEGO 22S model jump starter is representative of the Weego Design Accused Products.

RESPONSE: Paragraph 185 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 185 and therefore denies such allegations.

b) Infringement of the '015 Patent

186. On information and belief, select Respondents, including Respondent Carku, import, sell for importation, and/or sell within the United States after importation the Weego Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Weego Design Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Weego Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 186 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 186 and therefore denies such allegations.

187. A claim chart comparing independent claim 1 of the '015 Patent to the representative Weego Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 114.

RESPONSE: Paragraph 187 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 187 and therefore denies such allegations.

c) Infringement of the '024 Patent

188. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Weego Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Weego Design Accused Products also infringe one or more

of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Weego Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 188 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 188 and therefore denies such allegations.

189. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Weego Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 114.

RESPONSE: Paragraph 189 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 189 and therefore denies such allegations.

5. Claim Chart 05- Winplus Accused Products

a) Winplus Design

190. The Accused Products in Claim Chart 05 ("Winplus Design") are lithium battery powered jump starters offered under the WINPLUS and TYPE-S brands and have a cable assembly that includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is also a resistive divider sensor. On information and belief, the WINPLUS and TYPE S brand jump starters are manufactured by Shenzhen Winplus. The Type S–AC56388-BLK model jump starter is representative of the Winplus Design Accused Products.

RESPONSE: Paragraph 190 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 190 and therefore denies such allegations.

b) Infringement of the '015 Patent

191. On information and belief, select Respondents, including Respondent Winplus, import, sell for importation, and/or sell within the United States after importation the Winplus Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Winplus Design Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Winplus Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 191 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 191 and therefore denies such allegations.

192. A claim chart comparing independent claim 1 of the '015 Patent to the representative Winplus Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 115.

RESPONSE: Paragraph 192 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 192 and therefore denies such allegations.

c) Infringement of the '024 Patent

193. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Winplus Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Winplus Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Winplus Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 193 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 193 and therefore denies such

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allegations.

194. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Winplus Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 115.

RESPONSE: Paragraph 194 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 194 and therefore denies such allegations.

6. Claim Chart 06- Great Neck Accused Products

a) Great Neck Design

195. The Accused Products in Claim Chart 06 ("Great Neck Design") are lithium battery powered jump starters having a SMART CLAMP branded cable assembly. The cable assembly includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, includes a resistive divider sensor and transistor. The second sensor, which is the claimed reverse polarity sensor, is a resistive divider sensor. The Great Neck Accused Products are offered under at least the OEM Tools brand. The OEMTOOLS 24474 model jump starter is representative of the Great Neck Accused Products.

RESPONSE: Paragraph 195 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 195 and therefore denies such allegations.

b) Infringement of the '015 Patent

196. On information and belief, select Respondents, including OEM Tools, import, sell for importation, and/or sell within the United States after importation the Great Neck Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Great Neck Accused Products alsoinfringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Great Neck Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 196 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 196 and therefore denies such allegations.

197. A claim chart comparing independent claim 1 of the '015 Patent to the representative Great Neck Accused Product, and including photographs and drawings where applicable, is attached as Ex. 116.

RESPONSE: Paragraph 197 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 197 and therefore denies such allegations.

7. Claim Chart 07- ThiEye Accused Products

a) ThiEye Design

198. The Accused Products in Claim Chart 07 ("ThiEye Design") are lithium battery powered jump starters having a SMART CABLE branded cable assembly. The cable assembly includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is also a resistive sensor. The ThiEye Design Accused Products manufactured by Respondent ThiEye are offered under multiple brands, namely BUTURE, Finnemge, and UTRAI. The BUTURE BR500 model jump starter is representative of the ThiEye Design Accused Products.

RESPONSE: Paragraph 198 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 198 and therefore denies such allegations.

b) Infringement of the '015 Patent

199. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the ThiEye Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the ThiEye Design Accused Products also infringe one or more of dependent

claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The ThiEye Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 199 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 199 and therefore denies such allegations.

200. A claim chart comparing independent claim 1 of the '015 Patent to the representative ThiEye Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 117.

RESPONSE: Paragraph 200 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 200 and therefore denies such allegations.

c) Infringement of the '024 Patent

201. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the ThiEye Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the ThiEye Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The ThiEye Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 201 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 201 and therefore denies such allegations.

202. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative ThiEye Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 117.

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RESPONSE: Paragraph 202 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 202 and therefore denies such allegations.

8. Claim Chart 08- Energen/Performance Tool Accused Products

a) Energen/Performance Tool Design

203. The Accused Products in Claim Chart 08 ("Energen/ Performance Tool Design") are lithium battery powered jump starters having a cable assembly labeled as "SMART BOOSTER CABLE". The cable assembly includes a power switch with multiple transistors, and two sensors. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive sensor. The second sensor, which is the claimed reverse polarity sensor, is a resistive divider sensor. The Energen/Performance Tool Accused Products are offered under multiple brands, including Energen and Performance Tool. The ENERGEN AL12 model jump starter is representative of the Design 11 Accused Products.

RESPONSE: Paragraph 203 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 203 and therefore denies such allegations.

b) Infringement of the '015 Patent

204. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Energen/Performance Tool Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Energen/Performance Tool Accused Products also infringe one or more of dependent claims 4, 10, 11, 14, 18, 19 and 21 of the '015 Patent. The Energen/Performance Tool Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 204 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 204 and therefore denies such

allegations.

205. A claim chart comparing independent claim 1 of the '015 Patent to the representative Design 11 Accused Product, and including photographs and drawings where applicable, is attached as Ex. 118.

RESPONSE: Paragraph 205 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 205 and therefore denies such allegations.

c) Infringement of the '024 Patent

206. On information and belief, select Respondents import, sell for importation, and/or sell within the United States after importation the Energen/Performance Tool Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Energen/Performance Tool Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Energen/Performance Tool Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 206 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 206 and therefore denies such allegations.

207. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Energen/Performance Tool Accused Product, and including photographs and drawings where applicable, is attached as Ex. 118.

RESPONSE: Paragraph 207 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 207 and therefore denies such allegations.

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9. Claim Chart 09- HALO Accused Products

a) HALO Design

208. The Accused Products in Claim Chart 09 ("HALO Design") are lithium battery powered jump starters offered under the HALO BOLT brand, that include a relay and two sensors within the main housing of the jump starter. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is an optocoupler sensor. The HALO BOLT Wireless model jump starter is representative of the HALO Design Accused Products.

RESPONSE: Respondent admits that NOCO has, at Claim Chart 09, alleged that certain jump starter products infringe certain claims of the '015 Patent. Respondent specifically denies that the products that it imports and sells within the United States after importation infringe any valid and enforceable claim of the Asserted Patents. To the extent Paragraph 208 contains legal conclusions, no response is required. Respondent denies all remaining allegations of Paragraph 208.

b) Infringement of the '015 Patent

209. On information and belief, select Respondents, including Halo2Cloud, import, sell for importation, and/or sell within the United States after importation the HALO Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the HALO Design Accused Products also infringe one or more of dependent claims 10, 11, 14, 18, 19 and 21 of the '015 Patent. The HALO Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Respondent specifically denies that the products that it imports and sells within the United States after importation infringe any valid and enforceable claim of the Asserted Patents. Further answering, Paragraph 209 states a legal conclusion to which no response is required. To the extent one is required, Respondent denies that the "HALO Design Accused Products" satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States. Respondent denies the remaining allegations of Paragraph 209.

210. A claim chart comparing independent claim 1 of the '015 Patent to the representative HALO Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 119.

RESPONSE: Respondent admits that NOCO has attached, as Exhibit 119, a claim chart purportedly comparing independent claims relating to the '015 Patent to certain products of Respondent. Respondent specifically denies that any products identified in Exhibit 119 infringe any valid and enforceable claim of the Asserted Patents. Respondent denies the remaining allegations of Paragraph 210.

c) [WITHDRAWN]

211. [WITHDRAWN]

RESPONSE: Paragraph 211 of the Complaint has been withdrawn, thus no response is required.

212. [WITHDRAWN]

RESPONSE: Paragraph 212 of the Complaint has been withdrawn, thus no response is required.

10. Claim Chart 10- Clore Accused Products

a) Clore Design

213. The Accused Products in Claim Chart 10 ("Clore Design") are lithium battery powered jump starters offered under the Jump-n-Carry brand that have the power switch and two sensors within the main housing of the jump starter. The first sensor, which is the claimed vehicle battery isolation sensor, is a resistive divider sensor. The second sensor, which is the claimed reverse polarity sensor, is optocoupler sensor. The Jump-n-Carry JNC345 model jump starter is representative of the Clore Design Accused Products.

RESPONSE: Paragraph 213 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 213 and therefore denies such

allegations.

b) Infringement of the '015 Patent

214. On information and belief, select Respondents, including Respondent Clore Automotive, sell for importation, and/or sell within the United States after importation the Clore Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claim 1 of the '015 Patent. Certain of the Clore Design Accused Products also infringe one or more of dependent claims 4, 10, 14, 18, 19 and 21 of the '015 Patent. The Clore Design Accused Products satisfy all asserted claim limitations of the '015 Patent at the time of importation into the United States.

RESPONSE: Paragraph 214 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 214 and therefore denies such allegations.

215. A claim chart comparing independent claim 1 of the '015 Patent to the representative Clore Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 120.

RESPONSE: Paragraph 215 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 215 and therefore denies such allegations.

c) Infringement of the '024 Patent

216. On information and belief, select Respondents, including Respondent Clore Automotive, import, sell for importation, and/or sell within the United States after importation the Clore Design Accused Products, which directly infringe, literally and/or under the doctrine of equivalents, at least independent claims 1, 29 and 30 of the '024 Patent. Certain of the Clore Design Accused Products also infringe one or more of dependent claims 4, 5, 6, 16, 19, 23, 24, and 26 of the '024 Patent. The Clore Design Accused Products satisfy all asserted claim limitations of the '024 Patent at the time of importation into the United States.

RESPONSE: Paragraph 216 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 216 and therefore denies such allegations.

217. A claim chart comparing independent claims 1, 29, and 30 of the '024 Patent to the representative Clore Design Accused Product, and including photographs and drawings where applicable, is attached as Ex. 120.

RESPONSE: Paragraph 217 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 217 and therefore denies such allegations.

B. Infringement of the Asserted Trademarks

218. NOCO owns all right, title, and interest in the Asserted Trademarks and has standing to bring an action for trademark infringement under the Lanham Act, 15 U.S.C. § 1051 et seq.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to NOCO's alleged ownership of the Asserted Trademarks and therefore denies such allegations. To the extent Paragraph 218 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies Complainant's allegations that the Asserted Trademarks are infringed.

219. The Asserted Trademarks are on the Principal Register and such registration is prima facie evidence of validity, including secondary meaning. 15 U.S.C. § 1057(b). The Asserted Trademarks are used in commerce by NOCO to market, advertise, and sell the Boost® jump starters.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 219 and therefore denies the same.

220. As explained below, a number of the Respondents use at least one of the Asserted Trademarks in point-of-sale displays posted on online retail stores with the intention of attracting U.S. consumers. These point-of-sale webpages, which include Respondents' own sites as well as third-party commerce sites including Amazon, contain images superimposed with NOCO's Asserted Trademarks and/or use NOCO's Asserted Trademarks in the descriptions of the Accused Products. The webpages provide means for purchasing the Accused Products. Such displays are likely to cause confusion or mistake, and to deceive potential consumers and the public as to the source, origin, sponsorship or approval of Respondents' Accused Products, or as to the affiliation, connection, or association between Respondents and/or their jump starters and NOCO and/or the Boost(R) jump starters.

RESPONSE: Paragraph 220 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 220 and therefore denies such allegations.

221. The exhibits cited below are screenshots of the Accused Products being displayed on a webpage where the product may be purchased. The importation of the Accused Products via these webpages is further described in Section VII.

RESPONSE: Paragraph 221 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 221 and therefore denies such allegations.

222. The Asserted Trademarks are valid, owned by NOCO, and these webpages demonstrate a likelihood of confusion at the point-of-sale, and therefore Respondents are in violation of Section 32 of the Lanham Act. 15 U.S.C. § 1114.
The Respondents identified in the table below import into the United States, sell for importation, and/or sell in the United States after importation certain jump starters and components thereof, using point of sale webpages, and/or packaging that infringe the NOCO Trademarks:

Ultrasafe ('656 TM)	Safely Jump Start a Dead Battery in Seconds ('749 TM)
Audew	Autown
Autown	Beatit

Jumtop	Imazing
Sanrock	Jumtop
Topdon	Nexpow
Trekpow	Sanrock
	Trekpow

Table 3. Accused Products Infringing NOCO Asserted Trademarks

[image omitted]
Fig. 3- NOCO Website- Use of the '749 Trademark

[image omitted]
Fig. 4- NOCO Website- Use of the '656 and '749 Trademarks. Ex. 104

RESPONSE: Paragraph 222 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 222 and therefore denies such allegations.

Audew

223. The Audew brand uses the NOCO "Ultrasafe" and "Safely Jump Start a Dead Battery in Seconds" trademarks on its website and Amazon listing for its jump starters, which infringes NOCO's '656 and '749 Trademarks and are likely to cause confusion at the point-of-sale. *See* Ex. 27 and 50; *see also* Ex. 121 (importation evidence).

RESPONSE: Paragraph 223 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 223 and therefore denies such allegations.

Autown

224. The Amazon listing for the Autown brand of jump starters includes the phrase "jump starter your dead battery in seconds," and "jump start dead battery fast and safely" which infringes NOCO's '749 Trademark and is likely to cause confusion at the point-of-sale. *See* Ex. 28 and 29. The Autown brand also markets its products using the term "ultra-safe" infringing the '656 Trademark. *See* Ex. 29; *see also* Ex. 52 (importation evidence).

RESPONSE: Paragraph 224 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 224 and therefore denies such allegations.

Beatit

225. The Beatit brand uses the phrases "Safely Jumper start a dead battery in seconds" and "jump start a dead battery in seconds" on their Amazon listings for its jump starters, both of which infringe NOCO's '749 Trademark and are likely to cause confusion at the point-of -sale. *See* Ex. 30; *see also* Ex. 122 (importation evidence).

RESPONSE: Paragraph 225 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 225 and therefore denies such allegations.

Imazing

226. The Imazing brand jump starter listing on Amazon uses the phrase "safely jump start a dead battery in seconds" which infringes the NOCO '749 Trademark and is likely to cause confusion at the point-of-sale. *See* Ex. 33; *see also* Ex. 124 (importation evidence).

RESPONSE: Paragraph 226 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 226 and therefore denies such allegations.

Jumtop

227. The Jumtop brand of jump starters uses the phrases "ULTRA SAFE," "ultra-safe" and "jump start a dead battery in seconds" on its Amazon listings for its jump starters, which

infringes both the NOCO '656 and '749 Trademarks and is likely to cause confusion at the point-of-sale. *See* Ex. 34, 35 and 36; *see also* Ex. 72 (importation evidence).

RESPONSE: Paragraph 227 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 227 and therefore denies such allegations.

Nexpow

228. The Nexpow brand of jump starters uses the phrase "jump start a dead battery in seconds" on its Amazon listing for its jump starters, which infringes the NOCO '749 Trademark and is likely to cause confusion at the point-of-sale. *See* Ex. 37; *see also* Ex. 79 (importation evidence).

RESPONSE: Paragraph 228 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 228 and therefore denies such allegations.

Sanrock

229. The Sanrock brand of jump starters uses the phrases "safely jump start a dead battery in seconds" and "ultra-safe" in its Amazon listings for its jump starters, which infringes the NOCO '656 and '749 Trademarks and is likely to cause confusion at the point-of-sale. *See* Ex. 38 and 39; *see also* Ex. 86 (importation evidence).

[image omitted]

Fig.5- Image from Sanrock Amazon listing showing infringement of '749 Trademark

RESPONSE: Paragraph 229 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 229 and therefore denies such

allegations.

Topdon

230. The Topdon brand of jump starters uses the phrase "ultra safe" on the packaging of its Volcano jump starters, infringing the NOCO '656 Trademark. *See* Ex. 40; *see also* Ex. 92 (importation evidence).

RESPONSE: Paragraph 230 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 230 and therefore denies such allegations.

Trekpow

231. The Trekpow brand of jump starters uses the phrases "ultra-safe," "jump start dead battery in seconds," and "safely jump start a dead battery in seconds" in its Amazon listings, which infringes the NOCO '656 and '749 Trademarks and is likely to cause confusion at the point-of-sale. *See* Ex. 41, 42 and 43; *see also* Ex. 95 (importation evidence).

RESPONSE: Paragraph 231 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 231 and therefore denies such allegations.

VII. SPECIFIC INSTANCES OF IMPORTATION AND SALE

232. As stated above, on information and belief, a subset of Respondents manufactures and/or have manufactured outside the United States, import into the United States, and/or sell for importation into the United States the Accused Products. Other named Respondents import into the United States and/or sell after importation into the United States the Accused Products. The Accused Products, certain portable battery jump starters and related components, are imported, sold for importation, and/or sold after importation as described below.

RESPONSE: Respondent specifically denies that the products that it imports or sells infringe any valid and enforceable claim of the Asserted Patents. To the extent a response is required the

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remaining allegations of Paragraph 232, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 232 and therefore denies such allegations.

A. Carku Brands

1. AllStart

233. On information and belief, model numbers Boost (No. 550), Boost Max (No. 560), Boost Ultra (No. 590), and Micro-Boost (No. 540) (collectively, the "AllStart Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name AllStart. *See* Ex. 44C, ¶¶ 5-6.

RESPONSE: Paragraph 233 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 233 and therefore denies such allegations.

234. On information and belief, products sold under the brand AllStart are manufactured by and/or imported for sale by Respondents Horizon Tool, Carku, and Boltpower. *See* Ex. 44C, ¶¶ 5-6.

RESPONSE: Paragraph 234 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 234 and therefore denies such allegations.

235. The AllStart Accused Products are sold after importation into the United States. For example, a receipt from cal-vantools.com showing the purchase of an AllStart Boost (No.550) at an address in the United States is attached as Ex. 46. On information and belief, the AllStart Accused Products are also sold by Walmart, Advance Auto, and Horizon Tool. *See, e.g.,* https://www.walmart.com/ip/AllStart-540-Micro-Boost-Battery-Jump-Starter-500AMP-V6-Engines/635710663.

RESPONSE: Paragraph 235 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 235 and therefore denies such allegations.

236. The packaging of the AllStart Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 5 (citing Ex. 46).

RESPONSE: Paragraph 236 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 236 and therefore denies such allegations.

2. Antigravity Batteries

237. On information and belief, model numbers XP-1, XP-10, XP-10-HD, and XP-3 (collectively, the "Antigravity Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Antigravity. *See* Ex. 44C, ¶¶ 9-10.

RESPONSE: Paragraph 237 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 237 and therefore denies such allegations.

238. On information and belief, products sold under the brand Antigravity are manufactured by and/or imported for sale by Respondents Antigravity and Carku. *See* Ex. 44C, ¶¶ 9-10.

RESPONSE: Paragraph 238 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 238 and therefore denies such allegations.

239. The Antigravity Accused Products are sold after importation into the United States. For example, a receipt from antigravitybatteries.com showing the purchase of an Antigravity XP-3 and XP-10-HD at an address in the United States is attached as Ex. 48. The Antigravity Accused

Products are also sold by Respondent Walmart. *See, e.g.,* https://www.walmart.com/ip/Antigravity-Batteries-XP-10-HD-Heavy-Duty-MICRO-START-Jump-Starter-Portable-Power-Supply-Kit/580014186.

RESPONSE: Paragraph 239 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 239 and therefore denies such allegations.

240. The packaging of the Antigravity Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 10 (citing Ex. 48).

RESPONSE: Paragraph 240 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 240 and therefore denies such allegations.

3. Audew

241. On information and belief, model numbers Epower-146 (1000A/10800mAh), 500A/13800mAH, 800A/16800mAh, Epower-172 (1500A/17000mAh), and Epower-155 (1500A/2000mAh) (collectively, the "Audew Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Audew. *See* Ex. 44C, ¶¶ 13-14.

RESPONSE: Paragraph 241 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 241 and therefore denies such allegations.

242. On information and belief, products sold under the brand Audew are manufactured by and/or imported for sale by Respondent Carku. *See* Ex. 44C, ¶¶ 13-14; Ex. 121.

RESPONSE: Paragraph 242 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 242 and therefore denies such allegations.

243. The Audew Accused Products are sold after importation into the United States. For example, a receipt from audew.com showing the purchase of an Audew Epower-146 (1000A/10800mAh) and Epower-172 (1500A/17000mAh) at an address in the United States is attached as Ex. 121. The Audew Accused Products are also sold by Respondent Walmart. *See, e.g.,* https://www.walmart.com/ip/Audew-Jump-Starter-Car-Auto-Battery-Jump-Starter-Portable-2000A-Charger-20000mAh/226026281?findingMethod=wpa.

RESPONSE: Paragraph 243 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 243 and therefore denies such allegations.

244. The packaging of the Audew Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 11; Ex. 121.

RESPONSE: Paragraph 244 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 244 and therefore denies such allegations.

4. Autogen

245. On information and belief, model number MJS-P111B (4000A) (the "Autogen Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Autogen. *See* Ex. 44C, ¶¶ 15-16.

RESPONSE: Paragraph 245 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 245 and therefore denies such

allegations.

246. On information and belief, products sold under the brand Autogen are manufactured by and/or imported for sale by Respondent Carku. *See* Ex. 44C, ¶¶ 15-16.

RESPONSE: Paragraph 246 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 246 and therefore denies such allegations.

247. The Autogen Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Autogen MJS-P111B (4000A) at an address in the United States is attached as Ex. 51.

RESPONSE: Paragraph 247 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 247 and therefore denies such allegations.

248. The packaging of the Autogen Accused Product indicates that the product was "Made in China." *See* Ex. 44C, ¶ 15 (citing Ex. 51).

RESPONSE: Paragraph 248 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 248 and therefore denies such allegations.

5. Freeman

249. On information and belief, model number P800AJS (the "Freeman Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Freeman. *See* Ex. 44C, ¶¶ 47-48.

RESPONSE: Paragraph 249 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 249 and therefore denies such allegations.

250. On information and belief, products sold under the brand Freeman are manufactured by and/or imported for sale by Respondents Prime Global Products and Carku. *See* Ex. 44C, ¶¶ 47-48.

RESPONSE: Paragraph 250 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 250 and therefore denies such allegations.

251. The Freeman Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Freeman P800AJS at an address in the United States is attached as Ex. 66.

RESPONSE: Paragraph 251 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 251 and therefore denies such allegations.

252. The packaging of the Freeman Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 47 (citing Ex. 66).

RESPONSE: Paragraph 252 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 252 and therefore denies such allegations.

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6. **Gooloo**

253. On information and belief, model numbers GP1500, GP200, GP37-Plus, GP80 (800A), and GT-1500 (collectively, the "Gooloo Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Gooloo. *See* Ex. 44C, ¶¶ 49-51.

RESPONSE: Paragraph 253 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 253 and therefore denies such allegations.

254. On information and belief, products sold under the brand Gooloo are manufactured by and/or imported for sale by Respondent Gooloo and Carku. *See* Ex. 44C, ¶¶ 41-42.

RESPONSE: Paragraph 254 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 254 and therefore denies such allegations.

255. The Gooloo Accused Products are sold after importation into the United States. For example, receipts from Amazon.com showing the purchase of a Gooloo GP80 (800A), GP200, and GT-1500 at an address in the United States is attached as Ex. 67. The Gooloo Accused Products are also sold by Respondent Walmart. *See, e.g.,* https://www.walmart.com/ip/GOOLOO-800Amp-12-Volt-SuperSafe-Car-Jump-Starter-with-LED-Flashlight-and-USB-for-Up-to-4-5-Liter-Gasoline/801082784

RESPONSE: Paragraph 255 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 255 and therefore denies such allegations.

256. The packaging of the Gooloo Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 49-50 (citing Ex. 57).

RESPONSE: Paragraph 256 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 256 and therefore denies such allegations.

7. Grepro

257. On information and belief, model numbers GP-JS-1500A (GP71C) and GP-JS-500A (collectively, the "Grepro Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Grepro. *See* Ex. 44C, ¶¶ 52-53.

RESPONSE: Paragraph 257 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 257 and therefore denies such allegations.

258. On information and belief, products sold under the brand Grepro aremanufactured by and/or imported for sale by Respondent Carku. See Ex. 44C, ¶¶ 52-53. The Grepro Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Grepro GP-JS-1500A (GP71C) at an address in the United States is attached as Ex. 131.

RESPONSE: Paragraph 258 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 258 and therefore denies such allegations.

259. The packaging of the Grepro Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 52 (citing Ex. 68); Ex. 131.

RESPONSE: Paragraph 259 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 259 and therefore denies such

allegations.

8. **iClever**

260. On information and belief, model number IC-JQ21Y (the "iClever Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name iClever. *See* Ex. 44C, ¶¶ 56-58.

RESPONSE: Paragraph 260 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 260 and therefore denies such allegations.

261. On information and belief, products sold under the brand iClever are manufactured by and/or imported for sale by Respondent Carku. *See* Ex. 44C, ¶¶ 56-58.

RESPONSE: Paragraph 261 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 261 and therefore denies such allegations.

262. On information and belief, the iClever Accused Product is sold after importation into the United States. *See* Ex. 44C, ¶¶ 56-58 (citing Ex. 70).

RESPONSE: Paragraph 262 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 262 and therefore denies such allegations.

263. On information and belief, the iClever Accused Product is manufactured in China. *See* Ex. 44C, ¶¶ 56-58 (citing Ex. 70).

RESPONSE: Paragraph 263 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 263 and therefore denies such allegations.

9. [WITHDRAWN]

264. [WITHDRAWN]

RESPONSE: Paragraph 264 of the Complaint has been withdrawn, thus no response is required. .

265. [WITHDRAWN]

RESPONSE: Paragraph 265 of the Complaint has been withdrawn, thus no response is required.

266. [WITHDRAWN]

RESPONSE: Paragraph 266 of the Complaint has been withdrawn, thus no response is required.

267. [WITHDRAWN]

RESPONSE: Paragraph 267 of the Complaint has been withdrawn, thus no response is required.

10. Nekteck

268. On information and belief, model numbers NK-JS19800 (2000A/19800mAh), NK-JS12000 (D31) (500A/12000mAh), NK-JS12000 (600A/16800mAh), and D45 (800A/20000mAh) (collectively, the "Nekteck Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Nekteck. *See* Ex. 44C, ¶¶ 76-77.

RESPONSE: Paragraph 268 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 268 and therefore denies such

allegations.

269. On information and belief, products sold under the brand Nekteck are manufactured by and/or imported for sale by Respondent Nekteck. *See* Ex. 44C, ¶¶ 76-77.

RESPONSE: Paragraph 269 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 269 and therefore denies such allegations.

270. The Nekteck Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Nekteck NK-JS12000 (D31) (500A/12000mAh) and NK-JS12000 (600A/16800mAh) at an address in the United States is attached as Ex. 132.

RESPONSE: Paragraph 270 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 270 and therefore denies such allegations.

271. The packaging of the Nekteck Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 76 (citing Ex. 78); Ex. 132.

RESPONSE: Paragraph 271 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 271 and therefore denies such allegations.

11. PowerMax

272. On information and belief, model numbers PM91004 and PM91006 (collectively, the "PowerMax Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name PowerMax. *See* Ex. 44C, ¶¶ 88-89

RESPONSE: Paragraph 272 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 272 and therefore denies such allegations.

273. On information and belief, products sold under the brand PowerMax are manufactured by and/or imported for sale by Respondents PowerMax and Carku. *See* Ex. 44C, ¶¶ 88-89.

RESPONSE: Paragraph 273 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 273 and therefore denies such allegations.

274. The PowerMax Accused Products are sold after importation into the United States. For example, a receipt from Home Depot (homedepot.com) showing the purchase of a PowerMax PM91006 at an address in the United States is attached as Ex. 84.

RESPONSE: Paragraph 274 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 274 and therefore denies such allegations.

275. On information and belief, the PowerMax Accused Products are manufactured in China. *See* Ex. 44C, ¶ 88 (citing Ex. 84).

RESPONSE: Paragraph 275 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 275 and therefore denies such allegations.

12. Tacklife

276. On information and belief, model numbers KP120, KP200, T6, T8 (Newer Model), T8 Max, T8 MAX, and T8 Pro (collectively, the "Tacklife Accused Products") are manufactured

outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Tacklife. *See* Ex. 44C, ¶¶ 103-107.

RESPONSE: Paragraph 276 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 276 and therefore denies such allegations.

277. On information and belief, products sold under the brand Tacklife are manufactured by and/or imported for sale by Respondent Shenzhen Take Tools. *See* Ex. 44C, ¶¶ 103-107.

RESPONSE: Paragraph 277 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 277 and therefore denies such allegations.

278. The Tacklife Accused Products are sold after importation into the United States. For example, receipts from Amazon.com showing the purchase of a Tacklife T8, T8 (Newer Model), T8 MAX, and T8 Pro at an address in the United States are attached as Ex. 126.

RESPONSE: Paragraph 278 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 278 and therefore denies such allegations.

279. The packaging of the Tacklife Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 103-106; Ex. 126.

RESPONSE: Paragraph 279 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 279 and therefore denies such allegations.

13. Xiaomi

280. On information and belief, model number Midrive PS02 (11100 mAh 600A) (the "Xiaomi Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Xiaomi. *See* Ex. 44C, ¶¶ 131-132; Ex. 130C.

RESPONSE: Paragraph 280 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 280 and therefore denies such allegations.

281. On information and belief, products sold under the brand Xiaomi are manufactured by and/or imported for sale by Respondents 70mai and Carku. *See* Ex. 44C, ¶¶ 131-133; Ex. 130C.

RESPONSE: Paragraph 281 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 281 and therefore denies such allegations.

282. The Xiaomi Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a PS02 (11100 mAh 600A) jump starter at an address in the United States is attached as Ex. 129. In addition, Walmart.com and Amazon.com listings indicate the Xiaomi Accused Product is manufactured by and/or imported by Respondent 70mai. *See* Ex. 44C, ¶¶ 131-133 (citing Ex. 102); Ex. 130C.

RESPONSE: Paragraph 282 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 282 and therefore denies such allegations.

283. The packaging of the Xiaomi Accused Product identifies "70mai Co., Ltd." and indicates it was "Made in China." *See* Ex. 44C, ¶¶ 131-133 (citing Ex. 102); Ex. 130C (citing Ex. 129).

RESPONSE: Paragraph 283 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 283 and therefore denies such allegations.

B. Boltpower Brands

1. Ampeak

284. On information and belief, model number JS1 (the "Ampeak Accused Product")is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Ampeak. *See* Ex. 44C, ¶¶ 7-8.

RESPONSE: Paragraph 284 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 284 and therefore denies such allegations.

285. On information and belief, products sold under the brand Ampeak are manufactured by and/or imported for sale by Respondent Valuelink. *See* Ex. 44C, ¶¶ 5-6.

RESPONSE: Paragraph 285 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 285 and therefore denies such allegations.

286. The Ampeak Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Ampeak JS1 at an address in the United States is attached as Ex. 47.

RESPONSE: Paragraph 286 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 286 and therefore denies such allegations.

287. The packaging of the Ampeak Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 7 (citing Ex. 47).

RESPONSE: Paragraph 287 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 287 and therefore denies such allegations.

2. Arteck

288. On information and belief, model numbers A7, D29, JS08, and JS12 (collectively, the "Arteck Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Arteck. *See* Ex. 44C, ¶¶ 11-12.

RESPONSE: Paragraph 288 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 288 and therefore denies such allegations.

289. On information and belief, products sold under the brand Arteck are manufactured by and/or imported for sale by Respondents Arteck Electronic and Boltpower. *See* Ex. 44C, ¶¶ 11-12.

RESPONSE: Paragraph 289 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 289 and therefore denies such allegations.

290. The Arteck Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Arteck A7 at an address in the United States is attached as Ex. 49.

RESPONSE: Paragraph 290 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 290 and therefore denies such allegations.

291. The packaging of the Arteck Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 11 (citing Ex. 49).

RESPONSE: Paragraph 291 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 291 and therefore denies such allegations.

3. Autown

292. On information and belief, model numbers RP-PI-01 (1000A), RP-PI02 (500A/10000mAh), RP-PI-03 (800A), and RP-PI-04 (2000A) (collectively, the "Autown Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Autown. *See* Ex. 44C, ¶¶ 17-18.

RESPONSE: Paragraph 292 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 292 and therefore denies such allegations.

293. On information and belief, products sold under the brand Autown are manufactured by and/or imported for sale by Respondents Boltpower and Zhejiang Quingyou Electronic. *See* Ex. 44C, ¶¶ 17-18.

RESPONSE: Paragraph 293 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 293 and therefore denies such allegations.

294. The Autown Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of an Autown RP-PI-03 (800A)

at an address in the United States is attached as Ex. 52.

RESPONSE: Paragraph 294 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 294 and therefore denies such allegations.

295. The packaging of the Autown Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 17 (citing Ex. 52).

RESPONSE: Paragraph 295 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 295 and therefore denies such allegations.

4. Battery Tender

296. On information and belief, model numbers 030-1011-WAL (1000A/8000mAh), 030-1011-WH (1000A/8000mAh), 030-1000-PM (600A/6000mAh), and 030-1010-WH (800A/7200mAh) (collectively, the "Battery Tender Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Battery Tender. *See* Ex. 44C, ¶¶ 19-20.

RESPONSE: Paragraph 296 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 296 and therefore denies such allegations.

297. On information and belief, products sold under the brand Battery Tender are manufactured by and/or imported for sale by Respondents Deltran and Boltpower. *See* Ex. 44C, ¶¶ 19-20.

RESPONSE: Paragraph 297 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

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sufficient to form a belief as to the allegations of Paragraph 297 and therefore denies such allegations.

298. The Battery Tender Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Battery Tender 030-1010-WH (800A/7200mAh) at an address in the United States is attached as Ex. 53.

RESPONSE: Paragraph 298 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 298 and therefore denies such allegations.

299. The packaging of the Battery Tender Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 19 (citing Ex. 53).

RESPONSE: Paragraph 299 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 299 and therefore denies such allegations.

5. Beatit

300. On information and belief, model numbers B10 (500A), B10 Pro (800A), B7 (1200A), BP101 (2200A), D11 (800A), G18 (2000A), and G22 (1500A) (collectively, the"Beatit Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Beatit. *See* Ex. 44C, ¶¶ 21-23.

RESPONSE: Paragraph 300 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 300 and therefore denies such allegations.

301. On information and belief, products sold under the brand Beatit are manufactured by and/or imported for sale by Respondents Boltpower and Shenzhen Mediatek Tong. *See* Ex. 44C,

¶¶ 21-23.

RESPONSE: Paragraph 301 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 301 and therefore denies such allegations.

302. The Beatit Accused Products are sold after importation into the United States. For example, receipts from Amazon.com showing the purchase of a Beatit B10, B10 Pro (800A), B7 (1200A), BP101 (2200A), D11 (800A), and G18 (200A) at an address in the United States is attached as Ex. 122.

RESPONSE: Paragraph 302 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 302 and therefore denies such allegations.

303. The packaging of the Beatit Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 21-22; Ex. 122.

RESPONSE: Paragraph 303 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 303 and therefore denies such allegations.

6. Boltpower

304. On information and belief, model numbers A7P, D28, D29, G33A, and N02 (collectively, the "Boltpower Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Boltpower. *See* Ex. 44C, ¶¶ 24-26.

RESPONSE: Paragraph 304 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 304 and therefore denies such allegations.

305. On information and belief, products sold under the brand Boltpower are manufactured by and/or imported for sale by Respondent Boltpower and Tii Trading. *See* Ex. 44C, ¶¶ 24-26.

RESPONSE: Paragraph 305 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 305 and therefore denies such allegations.

306. The Boltpower Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com and eBay.com showing the purchase of a Boltpower A7P, D28, D29, G33A, and N02 at an address in the United States is attached as Ex. 55.

RESPONSE: Paragraph 306 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 306 and therefore denies such allegations.

307. The packaging of the Boltpower Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 24-25 (citing Ex. 55).

RESPONSE: Paragraph 307 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 307 and therefore denies such allegations.

7. DB Power/Valuelink

308. On information and belief, model numbers DJS50 (800A/18000mAh), DJS80, G15, G16 (2000A/20800mAh), A09, DJS40, DJS50, DJS60, G09D, and N01(collectively, the "DB Power Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United

States after importation under the brand name DB Power. *See* Ex. 44C, ¶¶ 31-32.

RESPONSE: Paragraph 308 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 308 and therefore denies such allegations.

309. On information and belief, products sold under the brand DB Power are manufactured by and/or imported for sale by Respondents Boltpower and Shenzhen Valuelink. *See* Ex. 44C, ¶¶ 31-32.

RESPONSE: Paragraph 309 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 309 and therefore denies such allegations.

310. The DB Power Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a DB Power DJS50 (800A/1800mAh) and G16 (2000A/20800mAh) at an address in the United States is attached as Ex. 58.

RESPONSE: Paragraph 310 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 310 and therefore denies such allegations.

311. The packaging of the DB Power Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 31 (citing Ex. 58).

RESPONSE: Paragraph 311 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 311 and therefore denies such allegations.

8. DieHard

312. On information and belief, model numbers 43448 (8000mAH) and DH110 (400A) (collectively, the "DieHard Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name DieHard. *See* Ex. 44C, ¶¶ 33-34.

RESPONSE: Paragraph 312 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 312 and therefore denies such allegations.

313. On information and belief, products sold under the brand Schumacher are manufactured by and/or imported for sale by Respondents Boltpower and Schumacher. *See* Ex. 44C, ¶¶ 33-34.

RESPONSE: Paragraph 313 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 313 and therefore denies such allegations.

314. The DieHard Accused Products are sold after importation into the United States. For example, receipts from Amazon.com and menards.com showing the purchase of a Die Hard DH110 and 43448 at an address in the United States are attached as Ex. 59. On information and belief, the DieHard Accused Products are also sold by Walmart. *See, e.g.,* https://www.walmart.com/ip/Diehard-Jumpstart-400amp/126963604?wmlspartner=wlpa&selectedSellerId=5227

RESPONSE: Paragraph 314 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 314 and therefore denies such allegations.

315. The packaging of the DieHard Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 33 (citing Ex. 59).

RESPONSE: Paragraph 315 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 315 and therefore denies such allegations.

9. Duralast

316. On information and belief, model numbers DL-2000lI and DL-800L (collectively, the "Duralast Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Duralast. *See* Ex. 44C, ¶¶ 35-36.

RESPONSE: Paragraph 316 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 316 and therefore denies such allegations.

317. On information and belief, products sold under the brand Duralast are manufactured by and/or imported for sale by Respondents Boltpower, Schumacher, and Best Parts. *See* Ex. 44C, ¶¶ 21-23

RESPONSE: Paragraph 317 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 317 and therefore denies such allegations.

318. The Duralast Accused Products are sold after importation into the United States. For example, a receipt from Autozone.com showing the purchase of a Duralast DL-800L at an address in the United States is attached as Ex. 60.

RESPONSE: Paragraph 318 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 318 and therefore denies such

allegations.

319. The packaging of the Duralast Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 35 (citing Ex. 60).

RESPONSE: Paragraph 319 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 319 and therefore denies such allegations.

10. EverStart

320. On information and belief, model number SL097 (collectively, the "EverStart Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name EverStart. *See* Ex. 44C, ¶¶ 39-40.

RESPONSE: Paragraph 320 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 320 and therefore denies such allegations.

321. On information and belief, products sold under the brand EverStart are manufactured by and/or imported for sale by Respondents Boltpower and Schumacher. *See* Ex. 44C, ¶¶ 39-40.

RESPONSE: Paragraph 321 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 321 and therefore denies such allegations.

322. The EverStart Accused Products are sold after importation into the United States. For example, a receipt from Walmart.com showing the purchase of an EverStart SL097 at an address in the United States is attached as Ex. 62.

RESPONSE: Paragraph 322 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 322 and therefore denies such allegations.

323. The packaging of the EverStart Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 39 (citing Ex. 62).

RESPONSE: Paragraph 323 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 323 and therefore denies such allegations.

11. Fconegy

324. On information and belief, model numbers FC100 and FC200 (collectively, the "Fconegy Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Fconegy. *See* Ex. 44C, ¶¶ 41-42.

RESPONSE: Paragraph 324 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 324 and therefore denies such allegations.

325. On information and belief, products sold under the brand Fconegy are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 41-42; Ex. 31.

RESPONSE: Paragraph 325 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 325 and therefore denies such allegations.

326. The Fconegy Accused Products are sold after importation into the United States.

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For example, a receipt from Amazon.com showing the purchase of a Fconegy FC100 at an address in the United States is attached as Ex. 63.

RESPONSE: Paragraph 326 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 326 and therefore denies such allegations.

327. The packaging of the Fconegy Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 41 (citing Ex. 63).

RESPONSE: Paragraph 327 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 327 and therefore denies such allegations.

12. Flylinktech

328. On information and belief, model numbers CF100, CF200, CF300, CF400, and CF600 (collectively, the "Flylinktech Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Flylinktech. *See* Ex. 44C, ¶¶ 43-44.

RESPONSE: Paragraph 328 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 328 and therefore denies such allegations.

329. On information and belief, products sold under the brand Flylinktech are manufactured by and/or imported for sale by Respondents Boltpower and Flylink Tech Company. *See* Ex. 44C, ¶¶ 43-44.

RESPONSE: Paragraph 329 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 329 and therefore denies such allegations.

330. The Flylinktech Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Flylinktech CF600 at an address in the United States is attached as Ex. 64.

RESPONSE: Paragraph 330 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 330 and therefore denies such allegations.

331. The packaging of the Flylinktech Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 43 (citing Ex. 64).

RESPONSE: Paragraph 331 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 331 and therefore denies such allegations.

13. Imazing

332. On information and belief, model numbers G26, G27, G29P, IM23, IM25, IM27/G26, IM29/G29, IM31, and J8 (collectively, the "Imazing Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Imazing. *See* Ex. 44C, ¶¶ 59-60.

RESPONSE: Paragraph 332 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 332 and therefore denies such allegations.

333. On information and belief, products sold under the brand Imazing are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 59-60.

RESPONSE: Paragraph 333 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 333 and therefore denies such allegations.

334. The Imazing Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Imazing J8 and IM23, and IM31 at an address in the United States is attached as Ex. 124. The Imazing Accused Products are also sold by Respondent Walmart. *See, e.g.,* https://www.walmart.com/ip/Imazing-Portable-Car-Lithium-Jump-Starter-2500A-Peak-21000mAh-Up-10L-Gas-Diesel-Engine-12V-Auto-Battery-Booster-Power-Pack-Jumper-Cables-QC-3-0-110V-/180839543

RESPONSE: Paragraph 334 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 334 and therefore denies such allegations.

335. The packaging of the Imazing Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 59; Ex. 124.

RESPONSE: Paragraph 335 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 335 and therefore denies such allegations.

14. Jumtop

336. On information and belief, model numbers N13, D09, E18, and N12 (collectively, the "Jumtop Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Jumtop. *See* Ex. 44C, ¶¶ 63-64.

RESPONSE: Paragraph 336 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 336 and therefore denies such allegations.

337. On information and belief, products sold under the brand Jumtop are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 63-64.

RESPONSE: Paragraph 337 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 337 and therefore denies such allegations.

338. The Jumtop Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Jumtop N13 at an address in the United States is attached as Ex. 72.

RESPONSE: Paragraph 338 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 338 and therefore denies such allegations.

339. The packaging of the Jumtop Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 63 (citing Ex. 72).

RESPONSE: Paragraph 339 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 339 and therefore denies such allegations.

15. KTI (K-Tool International)

340. On information and belief, model numbers KTI-74391, KTI-74392, and KTI-74393 (collectively, the "K-Tool Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name K-Tool. *See* Ex. 44C, ¶¶ 65-66.

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RESPONSE: Paragraph 340 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 340 and therefore denies such allegations.

341. On information and belief, products sold under the brand K-Tool are manufactured by and/or imported for sale by Respondents K-Tool and Boltpower. *See* Ex. 44C, ¶¶ 65-66.

RESPONSE: Paragraph 341 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 341 and therefore denies such allegations.

342. The K-Tool Accused Products are sold after importation into the United States. For example, a receipt from Walmart.com showing the purchase of a K-Tool KTI-74392 at an address in the United States is attached as Ex. 73. The K-Tool Accused Products are also sold by Respondent Advance Auto Parts. *See, e.g.,* https://shop.advanceautoparts.com/p/k-tool-international-jump-starter-power-s-kti74392/12009092-P?searchTerm=kti%20jump%20starter

RESPONSE: Paragraph 342 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 342 and therefore denies such allegations.

343. The packaging of the K-Tool Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 65 (citing Ex. 73).

RESPONSE: Paragraph 343 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 343 and therefore denies such allegations.

16. Lemsir

344. On information and belief, model numbers L6 (800A/10800mAh), V1 (2000A/21000mAh), V2 (1500A/15600mAh), V3 (2200A/21000mAh), and V8 (800A/12800mAh) (collectively, the "Lemsir Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Lemsir. *See* Ex. 44C, ¶¶ 67-68.

RESPONSE: Paragraph 344 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 344 and therefore denies such allegations.

345. On information and belief, products sold under the brand Lemsir are manufactured by and/or imported for sale by Respondents Boltpower and Shenzhen Mediatek Tong. *See* Ex. 44C, ¶¶ 67-68.

RESPONSE: Paragraph 345 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 345 and therefore denies such allegations.

346. The Lemsir Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Lemsir V8 (800A/12800mAh) at an address in the United States is attached as Ex. 74.

RESPONSE: Paragraph 346 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 346 and therefore denies such allegations.

347. The packaging of the Lemsir Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 67 (citing Ex. 74).

RESPONSE: Paragraph 347 of the Complaint is not directed at Respondent, thus no response is

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required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 347 and therefore denies such allegations.

17. Loftek

348. On information and belief, model numbers Y29 and G21 (collectively, the"Loftek Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Loftek. *See* Ex. 44C, ¶¶ 69-70.

RESPONSE: Paragraph 348 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 348 and therefore denies such allegations.

349. On information and belief, products sold under the brand Loftek are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 69-70.

RESPONSE: Paragraph 349 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 349 and therefore denies such allegations.

350. The Loftek Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Loftek G21 at an address in the United States is attached as Ex. 75.

RESPONSE: Paragraph 350 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 350 and therefore denies such allegations.

351. The packaging of the Loftek Accused Products indicates that the products are

"Made in China." *See* Ex. 44C, ¶ 69 (citing Ex. 75).

RESPONSE: Paragraph 351 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 351 and therefore denies such allegations.

18. Matco Tools

352. On information and belief, model numbers MICROJUMP, MINIJUMP3, and VERSAPRO3 (collectively, the "Matco Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Matco. *See* Ex. 44C, ¶¶ 71-73.

RESPONSE: Paragraph 352 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 352 and therefore denies such allegations.

353. On information and belief, products sold under the brand Matco are manufactured by and/or imported for sale by Respondents Matco, Boltpower, Carku, and Horizon Tool. *See* Ex. 44C, ¶¶ 71-73.

RESPONSE: Paragraph 353 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 353 and therefore denies such allegations.

354. The Matco Accused Products are sold after importation into the United States. For example, receipts from matcotools.com showing the purchase of a Matco MICROJUMP and VERSAPRO3 at an address in the United States is attached as Ex. 76.

RESPONSE: Paragraph 354 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 354 and therefore denies such allegations.

355. The packaging of the Matco Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 71-72 (citing Ex. 76).

RESPONSE: Paragraph 355 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 355 and therefore denies such allegations.

19. Nexpow

356. On information and belief, model numbers G7 (2000A) and G7 (1500A) (collectively, the "Nexpow Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Nexpow. *See* Ex. 44C, ¶¶ 78-79.

RESPONSE: Paragraph 356 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 356 and therefore denies such allegations.

357. On information and belief, products sold under the brand Nexpow are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 78-79.

RESPONSE: Paragraph 357 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 357 and therefore denies such allegations.

358. The Nexpow Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Nexpow G17 (1500A) at an address in the United States is attached as Ex. 79.

RESPONSE: Paragraph 358 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 358 and therefore denies such allegations.

359. The packaging of the Nexpow Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 78 (citing Ex. 79).

RESPONSE: Paragraph 359 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 359 and therefore denies such allegations.

20. PowerCache

360. On information and belief, model numbers 39602 and 39603 (G19) (collectively, the "PowerCache Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name PowerCache. *See* Ex. 44C, ¶¶ 86-87.

RESPONSE: Paragraph 360 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 360 and therefore denies such allegations.

361. On information and belief, products sold under the brand PowerCache are manufactured by and/or imported for sale by Respondents Boltpower and MonoPrice. *See* Ex. 44C, ¶¶ 86-87.

RESPONSE: Paragraph 361 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 361 and therefore denies such allegations.

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362. The PowerCache Accused Products are sold after importation into the United States. For example, a receipt from Monoprice.com showing the purchase of a PowerCache 39603 (G19) at an address in the United States is attached as Ex. 83.

RESPONSE: Paragraph 362 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 362 and therefore denies such allegations.

363. The packaging of the PowerCache Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 86-87 (citing Ex. 83).

RESPONSE: Paragraph 363 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 363 and therefore denies such allegations.

21. Roav

364. On information and belief, model numbers Pro 1000A and Pro 800 (collectively, the "Roav Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Roav. *See* Ex. 44C, ¶¶ 90-91.

RESPONSE: Paragraph 364 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 364 and therefore denies such allegations.

365. On information and belief, products sold under the brand Roav are manufactured by and/or imported for sale by Respondents Boltpower and Anker Innovations. *See* Ex.85.

RESPONSE: Paragraph 365 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 365 and therefore denies such allegations.

366. The Roav Accused Products are sold after importation into the United States. For example, a receipt from bestbuy.com showing the purchase of a Roav Pro 800 at an address in the United States is attached as Ex. 85. On information and belief, the Roav Accused Products are also sold by Respondents NAPA, Walmart and Best Buy. *See, e.g.,* https://www.bestbuy.com/site/anker-roav-jump-starter-pro-black/6297939.p?skuId=6297939

RESPONSE: Paragraph 366 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 366 and therefore denies such allegations.

367. The packaging of the Roav Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 90 (citing Ex. 85).

RESPONSE: Paragraph 367 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 367 and therefore denies such allegations.

22. Sanrock

368. On information and belief, model number G37 (the "Sanrock Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Sanrock. *See* Ex. 44C, ¶¶ 92-93.

RESPONSE: Paragraph 368 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 368 and therefore denies such allegations.

369. On information and belief, products sold under the brand Sanrock are manufactured

by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 92-93.

RESPONSE: Paragraph 369 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 369 and therefore denies such allegations.

370. The Sanrock Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Sanrock G37 at an address in the United States is attached as Ex. 86.

RESPONSE: Paragraph 370 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 370 and therefore denies such allegations.

371. The packaging of the Sanrock Accused Product indicates that the product is "Made in China." *See* Ex. 44C, ¶ 92 (citing Ex. 86).

RESPONSE: Paragraph 371 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 371 and therefore denies such allegations.

23. Schumacher

372. On information and belief, model numbers SL1312 (600A), SL1314 (600A), SL1315 (800A), SL1316 (1000A), SL1317 (1000A), SL1327 (800A), SL 1396 (800A) (collectively, the "Schumacher Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Schumacher. *See* Ex. 44C, ¶¶ 94-98.

RESPONSE: Paragraph 372 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

sufficient to form a belief as to the allegations of Paragraph 372 and therefore denies such allegations.

373. On information and belief, products sold under the brand Schumacher are manufactured by and/or imported for sale by Respondents Boltpower and Schumacher. *See* Ex. 44C, ¶¶ 94-98.

RESPONSE: Paragraph 373 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 373 and therefore denies such allegations.

374. The Schumacher Accused Products are sold after importation into the United States. For example, receipts from batterychargers.com, Walmart.com, Oreillyauto.com, and homedepot.com showing the purchase of a Schumacher SL 1312, SL1315, SL1316, and SL1396 at an address in the United States are attached as Ex. 87. On information and belief, the Schumacher Accused Products are also sold by Respondents AutoZone, Advance Auto, NAPA, and Lowe's. *See, e.g.,* https://www.lowes.com/pd/Schumacher-Electric-1200-Amp-Car-Battery-Jump-Starter-with-Digital-Display/1000569111;

RESPONSE: Paragraph 374 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 374 and therefore denies such allegations.

375. The packaging of the Schumacher Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 97 (citing Ex. 87).

RESPONSE: Paragraph 375 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 375 and therefore denies such allegations.

24. Tooliom

376. On information and belief, model number Epower-125 (2000A) (the "Tooliom Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Tooliom. *See* Ex. 44C, ¶¶ 108-109.

RESPONSE: Paragraph 376 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 376 and therefore denies such allegations.

377. On information and belief, products sold under the brand Tooliom are manufactured by and/or imported for sale by Respondents Boltpower and Carku. See Ex. 44C, ¶¶ 108-109.

RESPONSE: Paragraph 377 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 377 and therefore denies such allegations.

378. The Tooliom Accused Product is after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Tooliom Epower-125 (2000A) at an address in the United States is attached as Ex. 91.

RESPONSE: Paragraph 378 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 378 and therefore denies such allegations.

379. The packaging of the Tooliom Accused Product indicates that the product is "Made in China." *See* Ex. 44C, ¶ 108 (citing Ex. 91).

RESPONSE: Paragraph 379 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 379 and therefore denies such

allegations.

25. Topdon

380. On information and belief, model numbers VOLCANO1500 and VOLCANO2000 (collectively, the "Topdon Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Topdon. *See* Ex. 44C, ¶¶ 110-111.

RESPONSE: Paragraph 380 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 380 and therefore denies such allegations.

381. On information and belief, products sold under the brand Topdon are manufactured by and/or imported for sale by Respondents Boltpower and Shenzhen Dingjiang Technology. *See* Ex. 44C, ¶¶ 110-111.

RESPONSE: Paragraph 381 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 381 and therefore denies such allegations.

382. The Topdon Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Topdon VOLCANO2000 at an address in the United States is attached as Ex. 92.

RESPONSE: Paragraph 382 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 382 and therefore denies such allegations.

383. The packaging of the Topdon Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 110 (citing Ex. 92).

RESPONSE: Paragraph 383 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 383 and therefore denies such allegations.

26. Topvision

384. On information and belief, model number G26 (the "Topvision Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Topvision. *See* Ex. 44C, ¶¶ 112-113.

RESPONSE: Paragraph 384 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 384 and therefore denies such allegations.

385. On information and belief, products sold under the brand Topvision are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 112-113.

RESPONSE: Paragraph 385 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 385 and therefore denies such allegations.

386. The Topvision Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Topvision G26 at an address in the United States is attached as Ex. 93.

RESPONSE: Paragraph 386 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 386 and therefore denies such allegations.

387. The packaging of the Topvision Accused Product indicates that the products is

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"Made in China." *See* Ex. 44C, ¶ 112 (citing Ex. 93).

RESPONSE: Paragraph 387 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 387 and therefore denies such allegations.

27. Trekpow

388. On information and belief, model numbers A18, G22, and TJ2500 (collectively, the "Trekpow Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Trekpow. *See* Ex. 44C, ¶¶ 116-117.

RESPONSE: Paragraph 388 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 388 and therefore denies such allegations.

389. On information and belief, products sold under the brand Trekpow are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 116-117.

RESPONSE: Paragraph 389 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 389 and therefore denies such allegations.

390. The Trekpow Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Trekpow G22 at an address in the United States is attached as Ex. 95.

RESPONSE: Paragraph 390 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 390 and therefore denies such

allegations.

391. The packaging of the Trekpow Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 116.

RESPONSE: Paragraph 391 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 391 and therefore denies such allegations.

28. Vavofo

392. On information and belief, model number G23P (the "Vavofo Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Vavofo. *See* Ex. 44C, ¶¶ 122-124.

RESPONSE: Paragraph 392 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 392 and therefore denies such allegations.

393. On information and belief, products sold under the brand Vavofo are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 122-124.

RESPONSE: Paragraph 393 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 393 and therefore denies such allegations.

394. On information and belief, the Vavofo Accused Product is sold after importation into the United States. For example, a listing from Amazon.com indicating the Vavofo Accused Product is manufactured by Respondent Boltpower is attached as Ex. 98.

RESPONSE: Paragraph 394 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 394 and therefore denies such allegations.

395. The Vavofo Accused Product also indicates that the product is "Made in China." *See* Ex. 44C, ¶ 122 (citing Ex. 98).

RESPONSE: Paragraph 395 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 395 and therefore denies such allegations.

29. Vekkia

396. On information and belief, model numbers THOR-1000 and THOR-3000(collectively, the "Vekkia Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Vekkia. *See* Ex. 44C, ¶¶ 125-126.

RESPONSE: Paragraph 396 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 396 and therefore denies such allegations.

397. On information and belief, products sold under the brand Vekkia are manufactured by and/or imported for sale by Respondent Boltpower. *See* Ex. 44C, ¶¶ 124- 126.

RESPONSE: Paragraph 397 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 397 and therefore denies such allegations.

398. The Vekkia Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Vekkia THOR-1000 at an address

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in the United States is attached as Ex. 128.

RESPONSE: Paragraph 398 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 398 and therefore denies such allegations.

399. The packaging of the Vekkia Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 125; Ex. 128.

RESPONSE: Paragraph 399 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 399 and therefore denies such allegations.

30. **Yaber**

400. On information and belief, model numbers YR100, YR200, YR 600, YR500, YR700, and YR400 (collectively, the "Yaber Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Yaber. *See* Ex. 44C, ¶¶ 134-135.

RESPONSE: Paragraph 400 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 400 and therefore denies such allegations.

401. On information and belief, products sold under the brand Yaber are manufactured by and/or imported for sale by Respondents Boltpower and ThiEye Technologies. *See* Ex. 44C, ¶¶ 134-135.

RESPONSE: Paragraph 401 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

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sufficient to form a belief as to the allegations of Paragraph 401 and therefore denies such allegations.

402. The Yaber Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Yaber YR400 at an address in the United States is attached as Ex. 103.

RESPONSE: Paragraph 402 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 402 and therefore denies such allegations.

403. The packaging of the Yaber Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 134 (citing Ex. 103).

RESPONSE: Paragraph 403 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 403 and therefore denies such allegations.

C. Smartech Brands

1. Smartech

404. On information and belief, model numbers JS-10000, JS-15000, JS-15000N, JS-6000, JS-8000, JS-8000N, and TECH-5000P (collectively, the "Smartech Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Smartech. *See* Ex. 44C, ¶¶ 99-100.

RESPONSE: Paragraph 404 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 404 and therefore denies such allegations.

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405. On information and belief, products sold under the brand Smartech are manufactured by and/or imported for sale by Respondent Smartech. *See* Ex. 44C, ¶¶ 99-100.

RESPONSE: Paragraph 405 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 405 and therefore denies such allegations.

406. The Smartech Accused Products are sold after importation into the United States. For example, a receipt from smartech.com showing the purchase of a Smartech JS-10000, JS-15000, JS-15000N, JS-8000N, and TECH-5000P at an address in the United States is attached as Ex. 88. The Smartech Accused Products are also sold by Respondent Walmart. *See, e.g.,* https://www.walmart.com/ip/Smartech-JS-15000N-15000-mAh-Lithium-Powered-Vehicle-Jump-Starter-and-Power-Bank-Starter-and-Power-Bank/286772303

RESPONSE: Paragraph 406 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 406 and therefore denies such allegations.

407. The packaging of the Smartech Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 99 (citing Ex. 88).

RESPONSE: Paragraph 407 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 407 and therefore denies such allegations.

D. Weego Brands

1. Weego

408. On information and belief, model numbers 22, 44.1, 66.2, 154, 22s (collectively, the "Weego Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Weego. *See* Ex. 44C, ¶¶ 127-128.

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RESPONSE: Paragraph 408 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 408 and therefore denies such allegations.

409. On information and belief, products sold under the brand Weego are manufactured by and/or imported for sale by Respondents Paris Corporation and Carku. *See* Ex. 44C, ¶¶ 127-128.

RESPONSE: Paragraph 409 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 409 and therefore denies such allegations.

410. The Weego Accused Products are sold after importation into the United States. For example, a receipt from myweego.com showing the purchase of a Weego 22s at an address in the United States is attached as Ex. 101. The Weego Accused Products are also sold by Respondent Walmart. *See, e.g.,* https://www.walmart.com/ip/Weego-22s-Jump-Starter-1700-Peak-300- Cranking-Amps-Simple-and-Safe-Lithium-Ion-Water-Resistant-USA-Designed-and-Engineered/337164284

RESPONSE: Paragraph 410 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 410 and therefore denies such allegations.

411. The packaging of the Weego Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 127 (citing Ex. 101).

RESPONSE: Paragraph 411 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 411 and therefore denies such

allegations.

E. Winplus Brands

1. Type S

412. On information and belief, model numbers AC56388-BLK, AC56789-AM, AC56794-1 (collectively, the "Type S Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Type S. *See* Ex. 44C, ¶¶ 118-119.

RESPONSE: Paragraph 412 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 412 and therefore denies such allegations.

413. On information and belief, products sold under the brand Type S are manufactured by and/or imported for sale by Respondents Winplus North America. *See* Ex. 44C, ¶¶ 118-119.

RESPONSE: Paragraph 413 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 413 and therefore denies such allegations.

414. The Type S Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Type S AC56388-BLK at an address in the United States is attached as Ex. 96. The Type S Accused Products are also available from Respondent Walmart. *See, e.g.*, https://www.walmart.com/ip/Type-S-Lithium-Jump-Starter-Portable-Power-Bank-w-Built-in-Wireless-Charging/571679308

RESPONSE: Paragraph 414 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 414 and therefore denies such allegations.

415. The packaging of the Type S Accused Products indicates that the products are

"Made in China." *See* Ex. 44C, ¶ 118 (citing Ex. 96).

RESPONSE: Paragraph 415 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 415 and therefore denies such allegations.

2. Winplus

416. On information and belief, model numbers AC530171-1, AC55717-1, AC55929-6/1, AC55929-60, (collectively, the "Winplus Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Winplus. *See* Ex. 44C, ¶¶ 129-130.

RESPONSE: Paragraph 416 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 416 and therefore denies such allegations.

417. On information and belief, products sold under the brand Winplus are manufactured by and/or imported for sale by Respondent Winplus North America. *See* Ex. 44C, ¶¶ 129-130.

RESPONSE: Paragraph 417 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 417 and therefore denies such allegations.

418. The Winplus Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Winplus AC55717-1 at an address in the United States is attached as Ex. 100. On information and belief, the Winplus Accused Products are also sold by Respondents Walmart, Advanced Auto, and AutoZone. *See* http://winplus.com/usa/support/retail-locations/

RESPONSE: Paragraph 418 of the Complaint is not directed at Respondent, thus no response is

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required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 418 and therefore denies such allegations.

419. The packaging of the Winplus Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 129 (citing Ex. 100).

RESPONSE: Paragraph 419 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 419 and therefore denies such allegations.

F. Great Neck Brands

1. OEM Tools

420. On information and belief, model numbers 24474 (8000mAh), 24475 (12000mAh), and 24476 (18000mAh) (collectively, the "OEM Tools Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name OEM Tools. *See* Ex. 44C, ¶¶ 80-81.

RESPONSE: Paragraph 420 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 420 and therefore denies such allegations.

421. On information and belief, products sold under the brand OEM Tools are manufactured by and/or imported for sale by Respondent Great Neck. *See* Ex. 44C, ¶¶ 80-81.

RESPONSE: Paragraph 421 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 421 and therefore denies such allegations.

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422. The OEM Tools Accused Products are sold after importation into the United States. For example, a receipt from Autozone.com showing the purchase of a OEM Tools 24474 (8000mAh) at an address in the United States is attached as Ex. 80.

RESPONSE: Paragraph 422 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 422 and therefore denies such allegations.

423. The packaging of the OEM Tools Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 80 (citing Ex. 80).

RESPONSE: Paragraph 423 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 423 and therefore denies such allegations.

G. ThiEye Brands

1. Buture

424. On information and belief, model numbers BR300 and BR500 (collectively, the "Buture Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Buture. *See* Ex. 44C, ¶¶ 27-28.

RESPONSE: Paragraph 424 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 424 and therefore denies such allegations.

425. On information and belief, products sold under the brand Buture are manufactured by and/or imported for sale by Respondent ThiEye Technologies. *See* Ex. 44C, ¶¶ 27-28.

RESPONSE: Paragraph 425 of the Complaint is not directed at Respondent, thus no response is

required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 425 and therefore denies such allegations.

426. The Buture Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Buture BR500 at an address in the United States is attached as Ex. 56.

RESPONSE: Paragraph 426 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 426 and therefore denies such allegations.

427. The packaging of the Buture Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 27 (citing Ex. 56).

RESPONSE: Paragraph 427 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 427 and therefore denies such allegations.

2. **Fnnemge**

428. On information and belief, model number Q9C (the "Fnnemge Accused Product") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Fnnemge. *See* Ex. 44C, ¶¶ 45-46.

RESPONSE: Paragraph 428 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 428 and therefore denies such allegations.

429. On information and belief, products sold under the brand Fnnemge are

manufactured by and/or imported for sale by Respondent ThiEye. *See* Ex. 44C, ¶¶ 45-46.

RESPONSE: Paragraph 429 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 429 and therefore denies such allegations.

430. The Fnnemge Accused Product is sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Fnnemge Q9C at an address in the United States is attached as Ex. 123.

RESPONSE: Paragraph 430 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 430 and therefore denies such allegations.

431. The packaging of the Fnnemge Accused Product indicates that the product is "Made in China." *See* Ex. 44C, ¶¶ 45; Ex. 123.

RESPONSE: Paragraph 431 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 431 and therefore denies such allegations.

3. **Utrai**

432. On information and belief, model number Jstar One (the "Utrai AccusedProduct") is manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Utrai. *See* Ex. 44C, ¶¶ 120-121.

RESPONSE: Paragraph 432 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information

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sufficient to form a belief as to the allegations of Paragraph 432 and therefore denies such allegations.

433. On information and belief, products sold under the brand Utrai are manufactured by and/or imported for sale by Respondent ThiEye Technologies. See Ex. 44C, ¶¶ 120-121.

RESPONSE: Paragraph 433 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 433 and therefore denies such allegations.

434. The Utrai Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Utrai Jstar One at an address in the United States is attached as Ex. 127.

RESPONSE: Paragraph 434 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 434 and therefore denies such allegations.

435. The packaging of the Utrai Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 120; Ex. 127.

RESPONSE: Paragraph 435 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 435 and therefore denies such allegations.

H. Energen & Performance Tool Brands

1. Energen

436. On information and belief, model numbers AL12 and AL6 (collectively, the "Energen Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after

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importation under the brand name Energen. *See* Ex. 44C, ¶¶ 37-38.

RESPONSE: Paragraph 436 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 436 and therefore denies such allegations.

437. On information and belief, products sold under the brand Energen are manufactured by and/or imported for sale by Respondent Energen. *See* Ex. 44C, ¶¶ 37-38.

RESPONSE: Paragraph 437 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 437 and therefore denies such allegations.

438. The Energen Accused Products are sold after importation into the United States. For example, a receipt from myenergen.com showing the purchase of an Energen AL12 at an address in the United States is attached as Ex. 61. The Energen Accused Products are also sold by Respondents Best Buy and Walmart. *See* https://myenergen.com/resellers/

RESPONSE: Paragraph 438 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 438 and therefore denies such allegations.

439. The packaging of the Energen Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶ 37 (citing Ex. 61).

RESPONSE: Paragraph 439 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 439 and therefore denies such allegations.

2. Performance Tool

440. On information and belief, model number W16750 (collectively, the "Performance Tool Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Performance Tool. *See* Ex. 44C, ¶¶ 82-83.

RESPONSE: Paragraph 440 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 440 and therefore denies such allegations.

441. [WITHDRAWN]

RESPONSE: Paragraph 441 of the Complaint has been withdrawn, thus no response is required.

442. The Performance Tool Accused Products are sold after importation into the United States. For example, a receipt from carid.com showing the purchase of a Performance Tool W16750 at an address in the United States is attached as Ex. 81. The Performance Tool Accused Products are also sold by Respondent Walmart. *See, e.g.,* https://www.walmart.com/ip/Performance-Tool-W1665-900-amp-Jump-Starter-Inflator/55558632

RESPONSE: Paragraph 442 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 442 and therefore denies such allegations.

443. The packaging of the Performance Tool Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 82-83 (citing Ex. 81).

RESPONSE: Paragraph 443 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 443 and therefore denies such

allegations.

I. Halo Brands

1. HALO

444. On information and belief, model numbers Bolt Wireless, Bolt 57720, Bolt 58830, Bolt Flashlight, and Bolt Wireless (collectively, the "Halo Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Halo. *See* Ex. 44C, ¶¶ 54-55.

RESPONSE: Respondent admits that it sells certain Halo Bolt products after importation into the United States. Respondent lacks knowledge or information sufficient to form a belief as to the remaining allegations of Paragraph 444 and therefore denies such allegations.

445. On information and belief, products sold under the brand Halo are manufactured by and/or imported for sale by Respondents Carku and Halo2Cloud. *See* Ex. 44C, ¶¶ 54-55.

RESPONSE: Paragraph 445 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 445 and therefore denies such allegations.

446. The Halo Accused Products are sold after importation into the United States. For example, a receipt from Zagg.com showing the purchase of a Halo Bolt Wireless at an address in the United States is attached as Ex. 69.

RESPONSE: Respondent admits that it sells certain Halo Bolt products after importation into the United States. The remaining portions of Paragraph 446 are not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 446 and therefore denies such allegations.

447. The packaging of the Halo Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 54 (citing Ex. 69).

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RESPONSE: Respondent admits that Exhibit 69 contains an image of packaging for a product, which on its face displays the text "Made in China." Respondent denies the remaining allegations of paragraph 447.

J. Clore Brands

1. Jump-N-Carry

448. On information and belief, model numbers JNC325 and JNC345 (collectively, the "Jump-N-Carry Accused Products") are manufactured outside the United States and sold for importation into the United States, imported into the United States, and/or sold within the United States after importation under the brand name Jump-N-Carry. *See* Ex. 44C, ¶¶ 61-62.

RESPONSE: Paragraph 448 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 448 and therefore denies such allegations.

449. On information and belief, products sold under the brand Jump-N-Carry are manufactured by and/or imported for sale by Respondent Clore Automotive. *See* Ex. 44C, ¶¶ 61-62.

RESPONSE: Paragraph 449 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 449 and therefore denies such allegations.

450. The Jump-N-Carry Accused Products are sold after importation into the United States. For example, a receipt from Amazon.com showing the purchase of a Jump-N-Carry JNC345 at an address in the United States is attached as Ex. 107.

RESPONSE: Paragraph 450 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 450 and therefore denies such

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allegations.

451. The packaging of the Jump-N-Carry Accused Products indicates that the products are "Made in China." *See* Ex. 44C, ¶¶ 61 (citing Ex. 107).

RESPONSE: Paragraph 451 of the Complaint is not directed at Respondent, thus no response is required. To the extent a response is required, Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 451 and therefore denies such allegations.

VIII. HARMONIZED TARIFF SCHEDULE ITEM NUMBERS

452. The Accused Products are classified under at least the following subheadings of the Harmonized Tariff Schedule of the United States: 8504.40 (static converters) 8506.50 (lithium batteries); 8507.10, 8507.60 (lithium-ion electric storage batteries); 8511.40, 8511.50 (starter motors and generators), 8516.60, 8516.71 (ovens, coffee or tea makers); 8539.50.00 (LED lamps). These classifications are exemplary in nature and not intended to restrict the scope of any exclusion order or other remedy ordered by the Commission.

RESPONSE: Respondent denies that it imports products that are purportedly implicated by this Investigation. Accordingly, Respondent lacks knowledge or information to form a belief as to the remaining allegations of Paragraph 452 and therefore denies such allegations.

IX. DOMESTIC INDUSTRY

453. As required by 19 U.S.C. § 1337(a)(2), a domestic industry, as defined by 19 U.S.C. § 1337(a)(3), exists in the United States with respect to the Asserted Patents. Since its founding in 1914 with the development of battery corrosion preventative products in Cleveland, Ohio, where NOCO remains headquartered to this day, NOCO continues to research, develop, manufacture, and sell innovative battery-related products.

RESPONSE: To the extent Paragraph 453 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies that a domestic industry as required by 19 U.S.C. §§ 1337(a)(2) and (3) exists in the United States with respect to the Asserted Patents. Respondent otherwise lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 453 and therefore denies them.

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A. Technical Prong

454. NOCO has, and continues to make, significant and substantial investments in plant and equipment, labor and capital, and engineering and research and development with respect to the products that practice one or more claims of the Asserted Patents ("NOCO Domestic Industry Products"), including all six of the NOCO Boost® jump starter models. The NOCO Boost® jump starters practice at least the following claims of the Asserted Patents shown in Table 4:

Asserted Patent	Exemplary DI Claim(s)	Exemplary DI Product
9,007,015	1	GB40
10,604,024	1, 29, 30	GB40

Table 4. Asserted Patents Practiced by Domestic Industry Products

RESPONSE: Respondent lacks knowledge or information to admit or deny the allegations of Paragraph 454 and therefore denies the allegations.

455. The NOCO Domestic Industry Products all practice the claims of the Asserted Patents in the same manner. Claim charts demonstrating how the representative NOCO Domestic Industry Product practices these claims are attached as Confidential Exhibit 10C. This claim chart provides a basis for the domestic industry relating to both the '015 and '024 Patents.

RESPONSE: Respondent admits that claim charts are attached as Confidential Exhibits 10C to the Complaint. To extent Paragraph 455 contains legal conclusions, no response is required. Respondent lacks knowledge or information to admit or deny the allegations of Paragraph 455 and therefore denies the allegations.

456. The Asserted Trademarks appear in NOCO's website marketing materials and product information. *See* Ex. 8 and 104. This use of the Asserted Trademarks in commerce provides a basis for the domestic industry relating to both the '656 and '749 Trademarks.

RESPONSE: To the extent Paragraph 456 contains legal conclusions, no response is required. To the extent a response is required, Respondent denies that a domestic industry as required by 19 U.S.C. §§ 1337(a)(2) and (3) exists in the United States with respect to the Asserted Patents and Asserted Trademarks. Respondent otherwise lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 456 and therefore denies them.

B. Economic Prong

457. NOCO conducts all of its engineering, research and development, product design, testing, and sample construction in the United States. As such, NOCO has made significant investments in plant and equipment, labor and capital, and substantial investments in engineering, research and development with respect to the Asserted Patents and Asserted Trademarks in the United States, satisfying the requirements of 19 U.S.C. § 337(a)(3)(A)-(C). NOCO has invested, and continued to invest, in the United States millions of dollars per year in activities related to the design, engineering, development, testing, marketing, distribution, customer service, and warranty fulfillment relating to the NOCO Domestic Industry Products.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 457 and therefore denies them.

458. NOCO's headquarters in Glenwillow, Ohio houses NOCO's sales and marketing department, and serves as the main distribution center for North America. NOCO conducts product testing, compliance activities, and other technical support the Glenwillow facility. Accompanying this Complaint as Confidential Exhibit 105C is the Declaration of Jeffery Weiner, which provides information about NOCO's investments in connection with the NOCO Domestic Industry Products. Ex. 105C (DI Dec.) at ¶¶16-35.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 458 and therefore denies them.

459. NOCO conducts its design, research, and development activities at its facility in Peoria, Arizona. *Id.* at ¶13. NOCO conducts additional product design activities at its facility in Tempe, Arizona. *Id.* at ¶ 14.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 459 and therefore denies them.

460. NOCO has also employed significant labor and capital with respect to the NOCO Domestic Industry Products. *See* Ex. 105C at ¶¶ 22-30.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 460 and therefore denies them.

461. The first NOCO Boost® jump starter was introduced in 2014, and NOCO has continually improved the product since then. Notably, NOCO's spending on research and development has increased in each of the past three years. Ex. 105C at ¶33. From 2017 to the present, NOCO has paid several million dollars in payroll to engineering and technical personnel

in the United States, whose employment pertains to the engineering and technical aspects of the Boost® product line, including the patented subject matter. *Id.* at ¶34. NOCO has also invested in customer-specific design projects.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 461 and therefore denies them.

462. Since 2016 the majority of NOCO's revenue has been derived from sales of its Boost® line of jump starters. *Id.* at ¶15.

RESPONSE: Respondent lacks knowledge or information sufficient to form a belief as to the allegations of Paragraph 462 and therefore denies them.

X. RELATED LITIGATION

463. As of the date of the filing of this complaint, there have been 20 lawsuits involving the '015 Patent in U.S. District Courts. A chart outlining this litigation and its status is included as Ex. 108. The '015 Patent is also involved in two pending Inter Partes Review proceedings pending before the Patent Trial and Appeal Board ("PTAB") of the United States Patent and Trademark Office. One was filed by Carku (IPR2020-00944) on May 14, 2020 and the PTAB has instituted review. The other was filed by Shenzhen Mediatek Tong Technology Co, Ltd. on July 29, 2020; NOCO filed its preliminary response to the petition on December 16, 2020 and the PTAB's decision on whether or not to institute review is expected by March 2021.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 463 and therefore denies such allegations.

464. There has been no litigation involving the '024 Patent.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 464 and therefore denies such allegations.

465. As of the date of filing the complaint, there have been thirteen district court actions involving the Asserted Trademarks. *See* Ex. 109. There have been no proceedings before the PTAB.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 465 and therefore denies such allegations.

466. Other than the litigation specified above, to Complainant's knowledge, the Asserted Patents and Asserted Trademarks are not and have not been the subject of any current or prior litigation.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 466 and therefore denies such allegations.

XI. GEO

467. A general exclusion order is needed to prevent the circumvention of an order limited to the Proposed Respondents due to the widespread pattern of infringement, as well as the difficulty in identifying the source of the Accused Products. 19 U.S.C. § 1337 (d)(2). This is evidenced by the fact that Accused Products continue to enter the market despite NOCO's aggressive ongoing enforcement measures.

RESPONSE: To the extent a response to Complainant's request for relief is required, Respondent denies that Complainant is entitled to any relief whatsoever, including without limitation the requested relief of a general exclusion order.

468. Starting in 2014, NOCO began noticing the appearance of the Accused Products in the marketplace. NOCO responded by filing lawsuits against five foreign entities that were offering infringing jump starters on Amazon.com. Since then, NOCO has filed sixteen additional lawsuits, including suits in Canada, the United Kingdom and Germany. As a result of these efforts, NOCO secured a permanent injunction against two of the foreign entities barring them from selling or offering to sell jump starters that infringe NOCO's '015 patent and entered into a settlement agreement with a third foreign entity providing a substantial payment for past damages and a license for future sales. The remaining suits are pending.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 468 and therefore denies such allegations.

469. Despite these efforts, and successful litigation outcomes, NOCO continues to notice new market entrants selling jump starters with the same features as the NOCO Boost® products. NOCO vigilantly monitors Amazon.com listings and works with Amazon to remove listings for infringing products. NOCO estimates that in the past two years, it has had to file hundreds of takedown notices with Amazon. NOCO also filed a lawsuit against numerous defendants, including named Respondents Shenzhen Valuelink, Shenzhen Mediatek, Gooloo, alleging that these companies, *inter alia*, manipulated Amazon.com algorithms, which determine the product that will receive the "Amazon's Choice" Badge, such that defendants' products would receive the "Amazon's Choice" Badge instead of NOCO. *See The NOCO Company v. Shenzhen Valuelink E-Commerce Co., Ltd., et al.*, N.D. Ohio, No. 1:20-cv-00049-SO, (Jan. 9, 2020).

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 469 and therefore denies such allegations.

470. In pursuit of these enforcement efforts, NOCO has expended significant employee time in addition to legal fees. Through continuous monitoring, NOCO employees identify infringing products or abuse (e.g., manipulation of the Amazon platform) weekly, sometimes daily.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 470 and therefore denies such allegations.

471. In addition to products infringing the Asserted Patents, NOCO regularly sees 1) unauthorized use of NOCO trademarks; 2) unauthorized use of NOCO copyrighted images - in whole, or in part, meaning an entity has slightly modified a NOCO image to use with their product; 3) copying NOCO content with a similar look and stylization. For example, the FCOEnegy website (Ex. 31) uses a photo copied from the NOCO website that includes NOCO- branded jumper cables:

[image omitted]

Fig. 6- Excerpt from FCOEngergy website, Ex. 31

[image omitted]

Fig. 7- Photo from NOCO Website's HD Boost Battery Clamp Listing (Ex. 110)

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 471 and therefore denies such allegations.

472. Notably, NOCO has filed no less than 50 claims of infringement through Amazon Brand Registry for the Asserted Trademark ULTRASAFE.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 472 and therefore denies such allegations.

473. In terms of abuse or manipulation of the Amazon marketplace, NOCO has identified the following types of activities by proposed Respondents or other sellers of the Accused Products: 1) manipulating Amazon organic search ranking; 2) depressing legitimate products organic search ranking; 3) fake positive and negative reviews; 4) false product return claims to force a product takedown; 5) altering competitive products' browse nodes; 6) manipulating the Amazon Choice badge; and 7) altering NOCO content.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 473 and therefore denies such allegations.

474. Each instance of infringement or abuse is reported to NOCO's Global HQ, at which point it is either submitted to Amazon Brand Registry or becomes the subject of a lawsuit. For some types of infringement, NOCO has elected to stop using Brand Registry after finding that Amazon often simply modifies the listing with the infringing content; NOCO is now filing lawsuits in almost every instance. In 2020, NOCO enrolled in the Amazon SVS Program, at a cost of approximately $500,000 to help resolve these issues more efficiently. Registering with the SVS Program was critical as the number of infractions and instance of abuse were too high for the category manager assigned to NOCO to assist in resolution. The abuse by NOCO's competitors has become so prevalent that Amazon has placed the NOCO products into multiple exclusive protection programs.

RESPONSE: Respondent lacks knowledge or information to form a belief as to the allegations of Paragraph 474 and therefore denies such allegations.

XII. REQUESTED RELIEF

475. Proposed Respondents have infringed and will continue to infringe the Asserted Patents and Asserted Trademarks as specified in Section VI above unless the Commission prohibits the importation into and sale within the United States after importation of the Accused Products.

RESPONSE: Respondent denies the allegations of Paragraph 475.

476. Accordingly, NOCO respectfully requests that the United States International Trade Commission:

a) Institute an immediate investigation pursuant to Section 337(b)(1) of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, into Proposed Respondents' violations of Section 337 arising from the sale for importation into the United States, importation, and/or sale within the United States after importation of certain portable battery jump starters and components thereof that infringe the Asserted Patents and/or Asserted Trademarks;

b) Schedule and conduct a hearing, pursuant to 19 U.S.C. § 1337 (c), for purposes of receiving evidence and hearing arguments concerning whether Proposed Respondents have

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violated Section 337 and, following the hearing, determine that Proposed Respondents have violated Section 337;

c) Issue a permanent general exclusion order, pursuant to 19 U.S.C. § 1337(d)(1), excluding from entry into the United States certain portable battery jump starters and components thereof that are imported, sold for importation, or sold after importation that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks, including, without limitation, the specific Accused Products identified in this Complaint and the exhibits hereto; or, in the alternative, issue permanent limited exclusion orders specifically directed to each named Respondent and its subsidiaries, predecessors, affiliates, agents, successors, and assigns, excluding from entry into the United States certain portable battery jump starters and components that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks;

d) Issue permanent orders, pursuant to 19 U.S.C. § 1337(f), directing Proposed Respondents and any of their principals, stockholders, officers, directors, employees, agents, distributors, controlled (whether by stock ownership or otherwise) and majority-owned business entities, successors, and assigns to cease and desist from importing, selling, selling for importation, offering for sale, using, demonstrating, promoting, marketing, and/or advertising in the United States Respondents' portable battery jump starters and components thereof that infringe one or more claims of the Asserted Patents and/or Asserted Trademarks, including, without limitation, the specific Accused Products identified in this Complaint and the exhibits hereto;

e) Impose a bond on importation and sales of infringing products during the 60-day Presidential review period pursuant to 19 U.S.C. § 1337(j); and

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f) Grant all such other and further relief as it deems appropriate under the law, based upon the facts complained of herein and as determined by the Investigation.

RESPONSE: To the extent a response to Complainant's request for relief is required, Respondent denies that Complainant is entitled to any relief whatsoever, including without limitation the relief requested in Paragraph 476 of the Complaint.

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QVC'S ADDITIONAL DEFENSES

QVC specifically alleges and assert the following defenses in response to the allegations set forth in the Complaint. The inclusion of these additional defenses in this Response is not a concession that QVC bears the burden of proof with respect to any of them. Discovery has only recently begun and, therefore, QVC has not fully collected and reviewed all information that may be relevant to the matters and issues raised herein. Accordingly, pursuant to 19 C.F.R. § 210.14, QVC reserves the right to supplement, modify, and/or amend its defenses, and to take further positions as discovery proceeds in this Investigation.

FIRST ADDITIONAL DEFENSE

(Failure to State a Claim)

The Complaint fails to state a claim upon which relief may be granted.

SECOND ADDITIONAL DEFENSE

(No Unfair Act)

No unfair act has occurred in violation of 19 U.S.C. § 1337.

THIRD ADDITIONAL DEFENSE

(Invalidity)

Upon information and belief, the asserted claims of the '015 Patent are invalid for failing to comply with one or more of the conditions of patentability set forth in the United States patent statute, including 35 U.S.C. §§ 101, 102, 103, and/or 112.

The asserted claims of the Asserted Patents are invalid under 35 U.S.C. §§ 102(a), (b), (e) and/or 103 in view of at least the prior art listed below:

- U.S. Patent Application Publication No. 2013/0154543 ("Richardson")
- Chinese Patent No. 202696190 ("Zhang")

- U.S. Patent No. 9,954,391 ("Lei")
- U.S. Patent No. 5,319,298 ("Wanzong")
- WO Publication No. 2010/129723 to Baxter ("Baxter")
- U.S. Patent No. 8,172,603 ("Richardet")
- U.S. Patent No. 6,424,158 ("Klang")
- U.S. Patent Application No. 3004/0130298 ("Krieger")
- U.S. Patent No. 6,803,743 ("George");
- U.S. Patent No. 9,506,446 ("Xinfang"); and
- Chinese Utility Model Patent Publication No. CN 203211234 U

Further, on information and belief, one or more of the asserted claims of the Asserted Patents are invalid for lack of written description and/or enablement under 35 U.S.C. § 112 ¶ 1, and for failing to comply with the definiteness requirement of 35 U.S.C. § 112 ¶ 2.

FOURTH ADDITIONAL DEFENSE

(Non-infringement)

Respondent has not, and does not, import into the United States, sell for importation, or sell within the United States after importation any article that infringes any valid and enforceable claim of the '015 Patent, literally or under the doctrine of equivalents. Respondent has not otherwise committed any act in violation of 35 U.S.C. § 271 or 19 U.S.C. § 1337. Complainants have failed to show that Respondent's products practice each and every limitation of any asserted claim of the '015 Patent. Respondent's investigation is ongoing. Respondent reserves the right to alter, amend, or supplement this additional defense as this Investigation proceeds.

FIFTH ADDITIONAL DEFENSE

(Lack of Domestic Industry)

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To the extent that Respondent determines through discovery and investigation that there is no violation of Section 337 because Complainants have not adequately alleged and cannot prove the existence of a domestic industry, as required by Section 337(a)(2) and defined by Section 337(a)(3), in connection with the Asserted Patents, or that such domestic industry is in the process of being established, Respondent reserves the right to assert the lack of domestic industry as a defense.

SIXTH ADDITIONAL DEFENSE

(Equitable Estoppel, Acquiescence, Waiver, Implied License, and/or Unclean Hands)

Complainant acquiesced to Respondent's alleged infringement by filing and dropping a lawsuit, and thereafter remaining silent for a substantial period of time despite possessing knowledge of Respondent's accused products. Additionally, or alternatively, Complainant has engaged in misleading conduct to lead Respondent to reasonably infer that Complainant did not intend to assert the asserted patents against Respondent. For example, Complainant's '015 Patent issued on April 14, 2015, and the Halo Bolt 57220 was publicly launched in Q4 2015. On information and belief, Complainant had knowledge or should have had knowledge of the Halo Bolt 57720 at least as of the end of 2015.

On September 13, 2018, NOCO filed an action for patent infringement against Respondent and Halo2Cloud, LLC ("Halo") in the United States District Court for the District of Delaware, styled *The NOCO Company, Inc. v. Halo2Cloud, LLC, and QVC, Inc.*, Case No. 18-cv-1423 (D. Del.) ("Delaware Action"). Among other allegations, the Complaint filed in the Delaware Action alleged patent infringement against Respondent based on the '015 Patent, and identified the "Infringing Models" to be the "Halo Bolt 72220 Jump Starter" and "Halo Bolt 58330 Jump Starter" (collectively, the "Previously Accused Models"). On December 3, 2018,

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following challenge to the allegations, Complainant filed a Notice of Dismissal Without Prejudice in the Delaware Action. Complainant did not take any actions to attempt to enforce the '015 Patent or any other patent against Respondent until the filing of the Complaint in this investigation on January 19, 2021 ("ITC Complaint").

During the time period between the dismissal of the Delaware Action and the filing of the ITC Complaint, Respondent relied on Complainant's prior dismissal of the Delaware Action and continued silence to infer that Complainant did not intend to assert the '015 Patent or related patents against Respondent. For example, after December 2018, Respondent has expanded its offerings under the Halo Bolt product line and continued to develop a market for the Halo Bolt products. Complainant's unreasonable delay in reasserting its claims of infringement against Respondent for over two years (after initially delaying over two years before filing the Delaware Action) will cause Respondent undue prejudice. Many additional facts regarding Complainant's knowledge of the accused jump start products, its acquiescence, and unclean hands are uniquely in the possession of the Complainant, and Respondent's investigation is in the early stages and ongoing.

SEVENTH ADDITIONAL DEFENSE

(Prosecution History Estoppel / Disclaimer)

Complainant's patent infringement claims are barred, in whole or in part, based on prosecution history estoppel and/or prosecution disclaimer. Respondent has not infringed, and is not infringing, the asserted claims of the '015 Patent at least due in part to statements, representations, admissions, elections, positions, concessions, and filings made to the U.S. Patent and Trademark Office during prosecution of the application that matured into the '015 Patent and/or during *inter partes review* proceedings related to the '015 Patent, that, in part or

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collectively, constitute prosecution history estoppel and/or prosecution disclaimer. In addition, during prosecution of the '015 Patent, the applications narrowed the scope of the claims for reasons related to patentability, thereby surrendering subject matter Complainant now seeks to recover, to the extent it accuses Respondent of infringement under the doctrine of equivalents.

EIGHTH ADDITIONAL DEFENSE

(Other Defenses)

Respondent reserves the right to amend its Response to include other additional defenses that it may learn of during the course of the Investigation.

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REQUEST FOR RELIEF

WHEREFORE, QVC respectfully requests that the Commission:

(a) Determine that QVC does not violate Section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337).

(b) Determine that QVC does not infringe any valid and enforceable claim of the Asserted Patents.

(c) Determine that the claims of the Asserted Patents are invalid and/or unenforceable.

(d) Determine that there is no domestic industry from any of the Asserted Patents.

(e) Determine that, even if an unfair act by QVC is found, the relief sought should be denied because of public interest concerns.

(f) Enter an order terminating the Investigation with prejudice and grant such other relief as the Commission may deem proper.

(g) Deny all relief requested in the Complaint.

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RESPONSE TO THE NOTICE OF INVESTIGATION

Pursuant to Commission Rule 210.13, Respondent hereby responds to the Notice of Investigation issued by the Commission on March 17, 2021, and published in the Federal Register on March 23, 2021, as follows:

Respondent admits that The NOCO Company ("NOCO" or "Complainant") filed an amended complaint with the U.S. International Trade Commission on February 3, 2021, under Section 337 of the Tariff Act of 1930, as amended, as set forth in the Notice of Investigation. Respondent admits that the Notice of Investigation generally summarizes the allegations set forth in the Complaint.

Respondent admits that the Commission has instituted an Investigation as set forth in the Commission's Notice of Investigation. Respondent denies that it has engaged in unfair competition or violated Section 337 of the Tariff Act of 1930, as amended, by importing, selling for importation, or selling within the United States after importation any products that infringe any valid and enforceable intellectual property right at issue in this Investigation. Respondent further denies that any patent claim at issue in this Investigation is valid or enforceable. Respondent further denies that there is a protectable domestic industry, or that it is in the public interest to grant any relief to Complainant. Respondent reserves all rights to assert the defenses set forth in its Response to the Complaint in addition to any defense that may be identified during discovery in this Investigation.

At this stage of the Investigation and without conducting discovery as to identification of the Accused Products, Respondent provides in attached **Exhibit A** estimates of imports/sales based on an early understanding of the scope of the Accused Products. Respondent specifically

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denies that any of the supplied data refer or relate to any unlawful act under Section 337 or otherwise.

Dated: April 26, 2021

Respectfully submitted,

/s/ Beau Jackson

Beau Jackson
HUSCH BLACKWELL LLP
4801 Main Street, Suite 1000
Kansas City, MO 64112
Telephone: 816.983.8202
Beau.Jackson@huschblackwell.com

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Counsel for Respondent
QVC, Inc.

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VERIFICATION OF RESPONSE

I, Lindsay Meeks declare, in accordance with 19 C.F.R. §§ 210.4(c) and 210.13(b), under penalty of perjury, that the following statements are true:

1. I have read the foregoing Response to the Complaint and Notice of Investigation ("Response");

2. The Response is not being presented for any improper purpose, such as to harass or to cause unnecessary delay or needless increase in the cost of the investigation or related proceeding;

3. To the best of my knowledge, information and belief, based on reasonably inquiry, the Response contains claims, defenses, and other legal contentions that are warranted by existing law or by a non-frivolous argument for the extensions, modification, or reversal of existing law or the establishment of new law;

4. The allegations and other factual contentions contained in the Response have evidentiary support or, if specifically so identified, are likely to have evidentiary support after a reasonable opportunity for further investigation or discovery; and

5. The denials of factual contentions contained in the Response are warranted on the evidence or, if specifically so identified, are reasonably based on a lack of information or belief.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Dated: 4/20/21

Lindsay Meeks
Signature

Lindsay Meeks
Name

Buyer
Title

QVC, INC.

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing *RESPONSE OF QVC, INC. TO THE SECOND AMENDED COMPLAINT AND NOTICE OF INVESTIGATION* was served to the parties, in the manner indicated below, this the 26th day of April 2021.

The Honorable Lisa R. Barton Secretary to the Commission U.S. International Trade Commission 500 E Street, SW, Suite 112 Washington, DC 20436	☒ **VIA ELECTRONIC FILING** [EDIS]
The Honorable Clark S. Cheney Administrative Law Judge U.S. International Trade Commission 500 E Street, SW Washington, DC 20436	☒ **VIA ELECTRONIC MAIL** Cheney337@usitc.gov Patricia.Chow@usitc.gov Benjamin.Rudofsky@usitc.gov
Jeffrey Hsu Office of Unfair Import Investigations U.S. International Trade Commission 500 E Street, SW., Suite 401 Washington, DC 20436	☒ **VIA ELECTRONIC MAIL** jeffrey.hsu@usitc.gov
Todd Taylor Office of Unfair Import Investigations U.S. International Trade Commission 500 E Street, SW., Suite 401 Washington, DC 20436	☒ **VIA ELECTRONIC MAIL** Todd.Taylor@usitc.gov
Complainant The NOCO Company	
Deanna Tanner Okun V. James Adduci, II Lauren E. Peterson Juan J. Garcia Adduci, Mastriani & Schaumberg, L.L.P. 1133 Connecticut Avenue, N.W., 12th Floor Washington, DC 20036 Telephone: (202) 467-6300 Facsimile: (202) 466-2006 Michael J. Garvin Vorys, Sater, Seymour and Pease LLP 200 Public Square Suite 1400 Cleveland, OH 44114-2327 Telephone: (216) 479-6100	☒ **VIA ELECTRONIC MAIL** NOCO-001@adduci.com NOCO-ITC@vorys.com

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Facsimile: (216) 479-6060 Rex W. Miller, II Vorys, Sater, Seymour and Pease LLP 52 East Gay Street Columbus, OH 43215 Telephone: (614) 464-6207 Facsimile: (614) 719-4766	
Respondent Advance Auto Parts, Inc.	
Stefani E. Shanberg Robin L. Brewer Karl M. Johnston MORRISON & FOERSTER LLP 425 Market Street San Francisco, CA 94105 Tel: (415) 268-7000 Veronica S. Ascarrunz MORRISON & FOERSTER LLP 2100 L Street, NW, Suite 900 Washington, DC 20037 Tel: (202) 887-1500	☒ **VIA ELECTRONIC MAIL** AdvanceAutoPartsITC@mofo.com
Respondent Anker Technology (UK) LTD	
P. Andrew Riley Lei Mei Robert A. Hall Jiwei Zhang MEI & MARK LLP 818 18th Street NW, Suite 410 Washington, DC 20006 Telephone: 888-860-5678 Facsimile: 888-706-1173 Email: MeiMark-ITC-1256@meimark.com Timothy Wang Hao Ni Neal Massand Stevenson Moore V NI, WANG & MASSAND, PLLC 8140 Walnut Hill Ln., Ste. 500 Dallas, TX 75231 Tel: (972) 331-4600 Fax: (972) 314-0900 Email: nwm-itc@nilawfirm.com	☒ **VIA ELECTRONIC MAIL** MeiMark-ITC-1256@meimark.com nwm-itc@nilawfirm.com

Respondents AutoZone, Inc. and Best Parts, Inc	
Adam D. Swain Brian D. Hill Emily Grand Alston & Bird LLP 950 F Street NW Washington, DC 20004 Telephone: (202) 239-3300 Facsimile: (202) 239-3333	☒ **VIA ELECTRONIC MAIL** Autozone-ITC@alston.com
Respondent Deltran USA, LLC	
Austen C. Endersby FOX ROTHSCHILD LLP 1030 15th Street, N.W., Suite 380 East Washington, DC 20005 Tel: (202) 461-3118 Fax: (202) 461-3102 Jonathan R. Lagarenne FOX ROTHSCHILD LLP 1225 17th Street, Suite 2200 Denver, CO 80202 Tel.: (303) 292-1200 Fax: (303) 292-1300 Robert J. Sacco FOX ROTHSCHILD LLP 777 S. Flagler Drive Suite 1700 West Tower West Palm Beach, FL, 33401 Tel: 561-804-4420 Fax: 561-835-9602 Ryan N. Miller FOX ROTHSCHILD LLP 2000 Market Street, 20th Floor Philadelphia, Pennsylvania 19103 Telephone: (215) 299-2000 Facsimile: (215) 299-2150	☒ **VIA ELECTRONIC MAIL** Deltran-ITC@foxrothschild.com
Respondent National Automotive Parts Association, LLC	
Benjamin Levi Rett Snotherly LEVI & SNOTHERLY, PLLC 1101 Connecticut Avenue, N.W., Suite 450	☒ **VIA ELECTRONIC MAIL** napa-ls-1256@levisnotherly.com

Washington, DC 20036 Telephone: (202) 997-3711 Telecopier: (202) 331-1324	
Respondents Guangdong Boltpower Energy Co., Ltd. and Best Buy Co., Inc	
P. Andrew Riley Lei Mei Robert A. Hall Jiwei Zhang MEI & MARK LLP 818 18th Street NW, Suite 410 Washington, DC 20006 Telephone: 888-860-5678 Facsimile: 888-706-1173 Email: MeiMark-ITC-1256@meimark.com Timothy Wang Hao Ni Neal Massand Stevenson Moore V NI, WANG & MASSAND, PLLC 8140 Walnut Hill Ln., Ste. 500 Dallas, TX 75231 Tel: (972) 331-4600 Fax: (972) 314-0900 Email: nwm-itc@nilawfirm.com	☒ **VIA ELECTRONIC MAIL** MeiMark-ITC-1256@meimark.com nwm-itc@nilawfirm.com
Respondents Schumacher Electric Corporation and Schumacher Power Technology Ltd **Respondents Lowe's Companies, Inc.** **Respondents O'Reilly Automotive, Inc.** **Respondents Walmart Inc.**	
Lyle B. Vander Schaaf Fei Hu Hefeng Su BRINKS GILSON & LIONE 1775 Pennsylvania Avenue, NW Suite 900 Washington, DC 20006 Tel: (202) 296-8700 Fax: (202) 296-8701 Schumacher-1256@BrinksGilson.com Jacob C. Bachman BRINKS GILSON & LIONE NBC Tower – Suite 3600 455 N. Cityfront Plaza Drive Chicago, IL 60611	☒ **VIA ELECTRONIC MAIL** Schumacher-1256@BrinksGilson.com

Tel: (312) 321-4200 Fax: (312) 321-4299 Schumacher-1256@BrinksGilson.com Michael Dorfman Dykema Gossett PLLC 10 South Wacker Drive, Suite 2300 Chicago, Illinois 60606 Tel: (312) 627-2281 Fax: (855) 262-1829	
Respondent Smartech Products, Inc.	
R. Eric Gaum Taft Stettinius & Hollister LLP 200 Public Square, Suite 3500 Cleveland, Ohio 44114-2302 Telephone: 216-241-2838 Facsimile: 216-241-3707 Email: egaum@taftlaw.com Jaimin Shah Taft Stettinius & Hollister LLP 111 East Wacker, Suite 2800 Chicago, Illinois 60601 Telephone: 312-527-4000 Facsimile: 312-527-4011 Email: jshah@taftlaw.com	☒ **VIA ELECTRONIC MAIL** Smartech-ITC@taftlaw.com
Respondent Shenzhen Carku Technology Co., Ltd.	
John P. Schnurer Kevin J. Patariu John D. Esterhay Abigail A. Gardner PERKINS COIE LLP 11452 El Camino Real, Suite 300 San Diego, CA 92130-2080 Phone: (858) 720-5700 Email: PerkinsServiceCarku-NOCO-ITC@perkinscoie.com James B. Coughlan PERKINS COIE LLP 700 Thirteenth Street N.W., Suite 800 Washington, DC 20005-3960 Phone: (202) 654-6200 Email: PerkinsServiceCarku-NOCO-ITC@perkinscoie.com	☒ **VIA ELECTRONIC MAIL** PerkinsServiceCarku-NOCO-ITC@perkinscoie.com

R. Tyler Kendrick PERKINS COIE LLP 1201 Third Avenue, Suite 4900 Seattle, WA 98101-3099 Phone: (206) 359-8000 Email: PerkinsServiceCarku-NOCO-ITC@perkinscoie.com	
Respondents Shenzhen Carku Technology Co., Ltd., 70mai Co., Ltd., Antigravity Batteries LLC, Gooloo Technologies LLC, Horizon Tool, Inc., Great Neck Saw Manufacturers, Inc., Matco Tools Corporation, Nekteck, Inc., Paris Corporation, and PowerMax Battery (U.S.A.), Inc	
John P. Schnurer PERKINS COIE LLP 11452 El Camino Real, Suite 300 San Diego, CA 92130-2080 Phone: (858) 720-5700	☒ **VIA ELECTRONIC MAIL** JSchnurer@perkinscoie.com
Respondent Shenzhen Dinjiang Technology Co., Ltd.	
Richard S. Mandel COWAN, LIEBOWITZ & LATMAN, P.C. 114 West 47th Street New York, NY 10036 Telephone: (212) 790-9200 Facsimile: (212) 575-0671	☒ **VIA ELECTRONIC MAIL** rsm@cll.com
Respondent Winplus North America, Inc.	
Tuhin Ganguly David Shaw Goutam Patnaik DESMARAIS LLP 1701 Pennsylvania Avenue NW, Suite 200 Washington, D.C. 20006 Telephone: (202) 451-4912 Facsimile: (202) 451-4901 Laura Fraedrich Christian C. Contardo LOWENSTEIN SANDLER 2200 Pennsylvania Avenue, N.W. Washington, D.C. 20037 Telephone: (202) 753-3800 Facsimile: (202) 753-3838 Meg Slachetka Mark Kesslen LOWENSTEIN SANDLER	☒ **VIA ELECTRONIC MAIL** Winplus-1256@desmaraisllp.com lfraedrich@lowenstein.com ccontardo@lowenstein.com mslachetka@lowenstein.com mkesslen@lowenstein.com kgrange@lowenstein.com

1251 Avenue of the Americas New York, NY 10020 Telephone: (212) 262-6700 Facsimile: (212) 262-7402 Kevin O. Grange LOWENSTEIN SANDLER 390 Lytton Avenue Palo Alto, CA 94301 Telephone: (650) 433-5800 Facsimile: (650) 433-5700	

/s/ Anna Florian, Paralegal
HUSCH BLACKWELL LLP

USB Power Delivery Specification 1.0

July 16, 2012

Exhibit 1045

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Notice

Please submit written feedback to:

techsup@usb.org

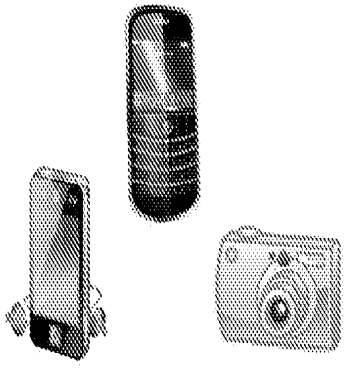
Carku, Exhibit 1045
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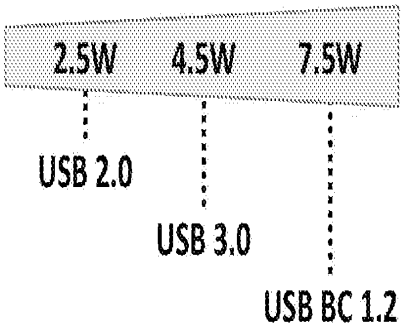
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CAR-RPA-ITC-02215

Taking a Great Idea …

Broad international adoption of USB Battery Charging standard for mobile devices

- China, Europe drove standardization as a means to increase charger reuse and reduce electronic waste





Agreement reached on Micro-USB connector and the standard for the common mobile charger

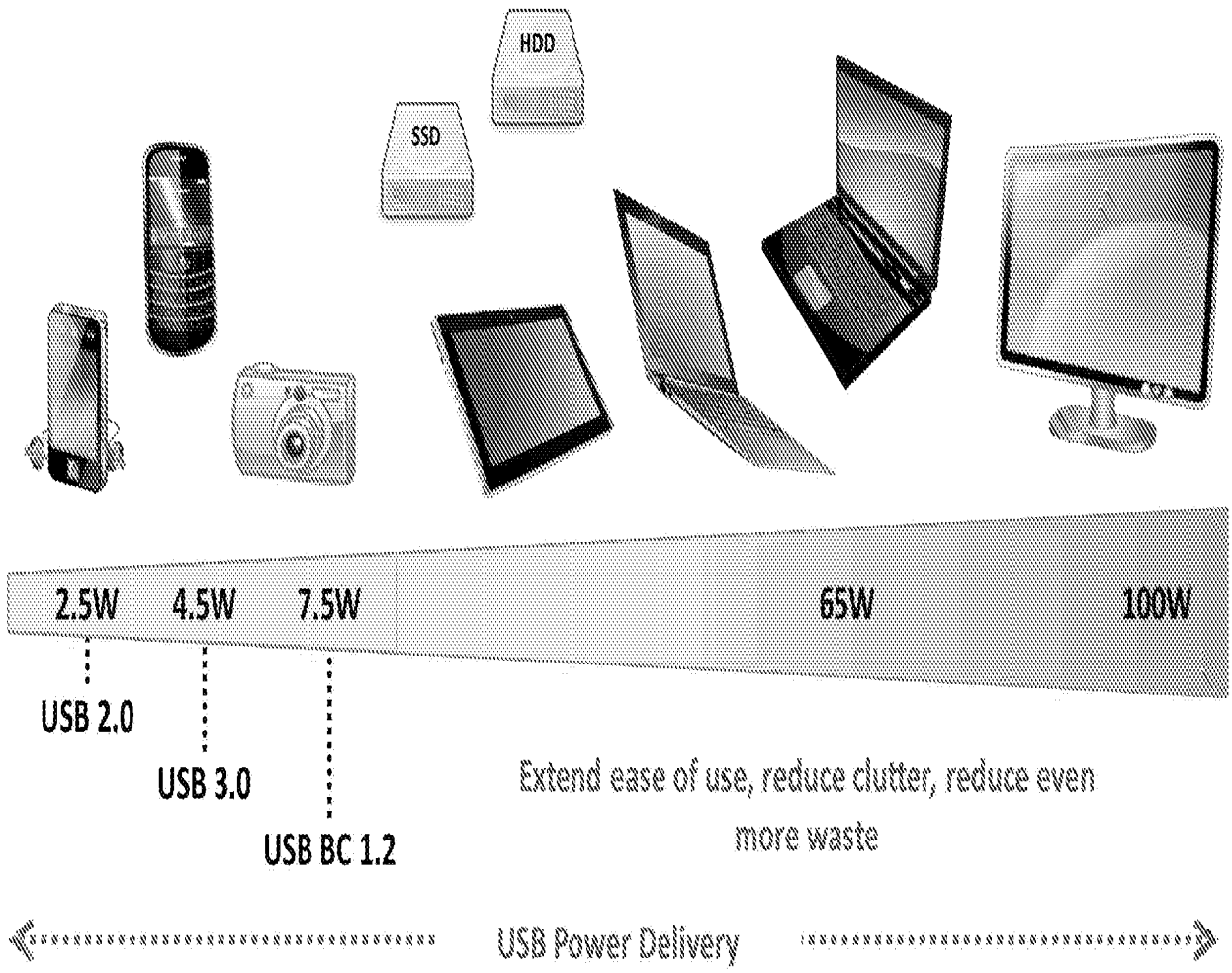
CENELEC and the USB Implementers Forum reach agreement on memorandum of understanding

BRUSSELS – March 1, 2011 – A Memorandum of Understanding (MoU) was signed today between the USB-IF and CENELEC, the European Committee for Electrotechnical Standardization.

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Taking a Great Idea and Making it Even Better



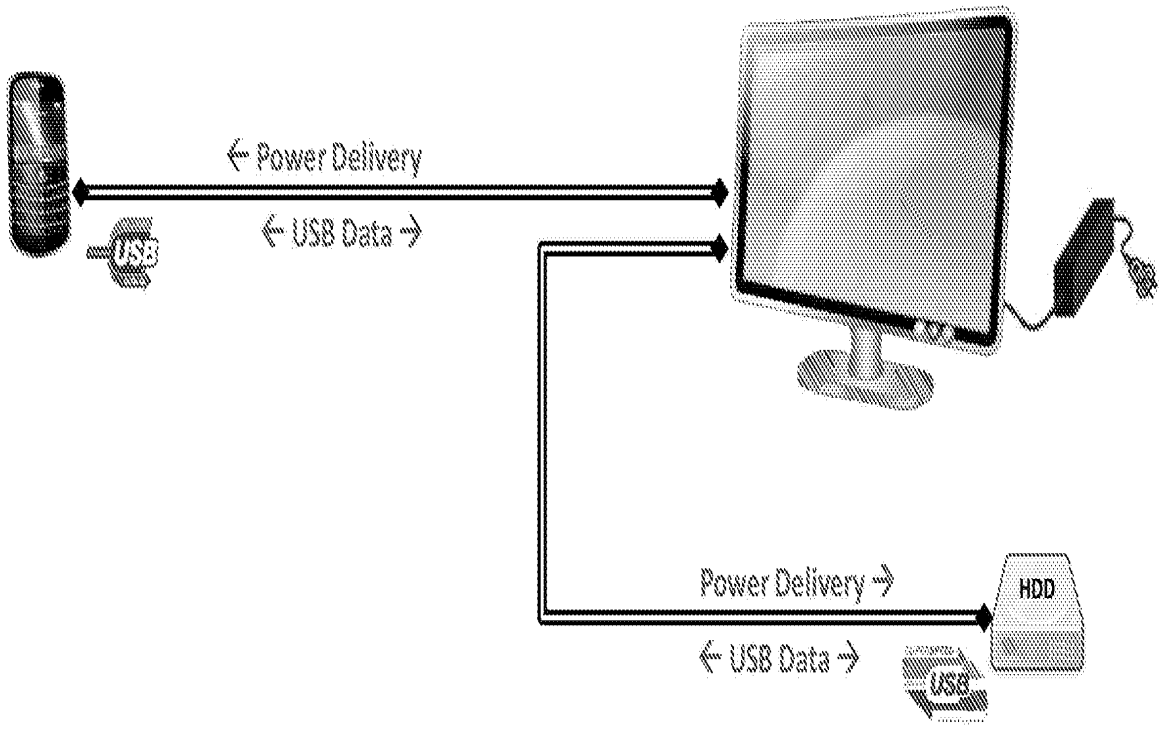
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USB Display Docking Example

Display is power source and hub to hosts/devices connected to it

Phone or notebook is USB host driving display and other USB features within or attached to the display



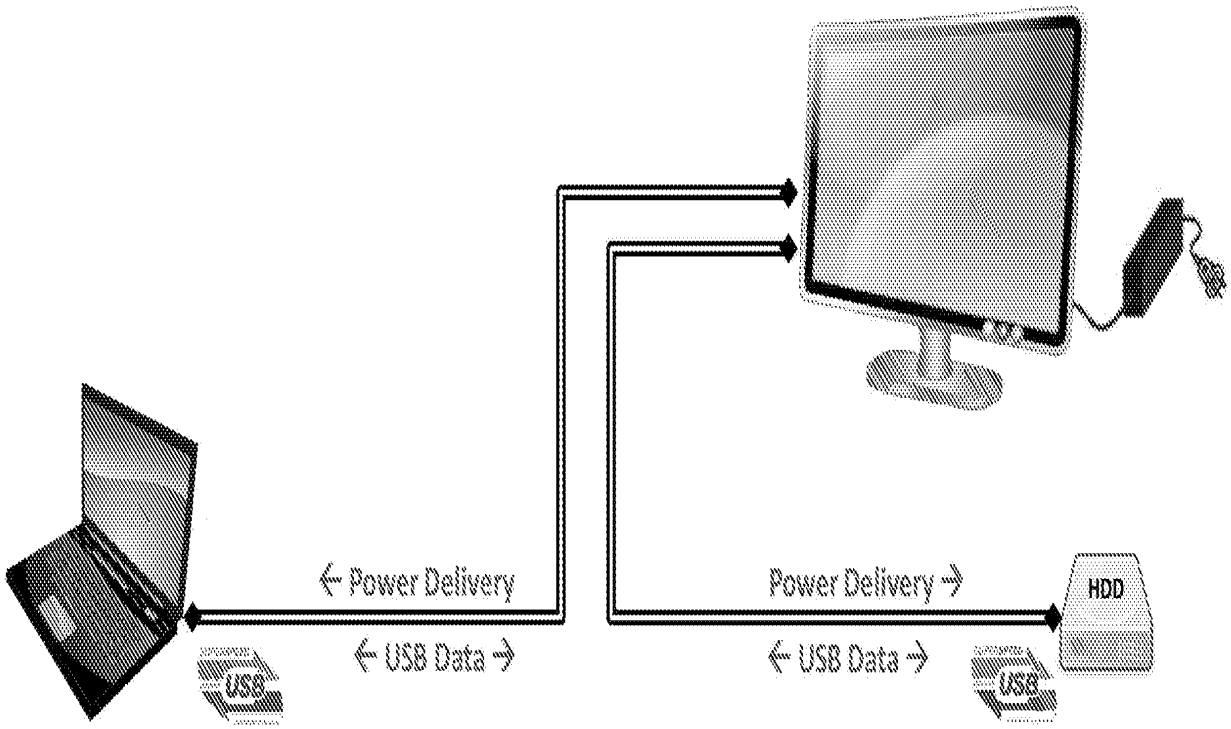
Carku, Exhibit 1045
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USB Display Docking Example

Display is power source and hub to hosts/devices connected to it

Phone or notebook is USB host driving display and other USB features within or attached to the display



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Key Characteristics

- Compatible with existing USB 2.0 and USB 3.0 cables and connectors
- Enables voltage and current values to be negotiated over the USB power pins
- Enables higher voltage and current in order to deliver power up to almost 100W
  - Limits to match cable capabilities
  - Upper limit bound by international safety requirements
- Switchable source of power delivery without changing cable direction
- Coexists with USB Battery Charging 1.2

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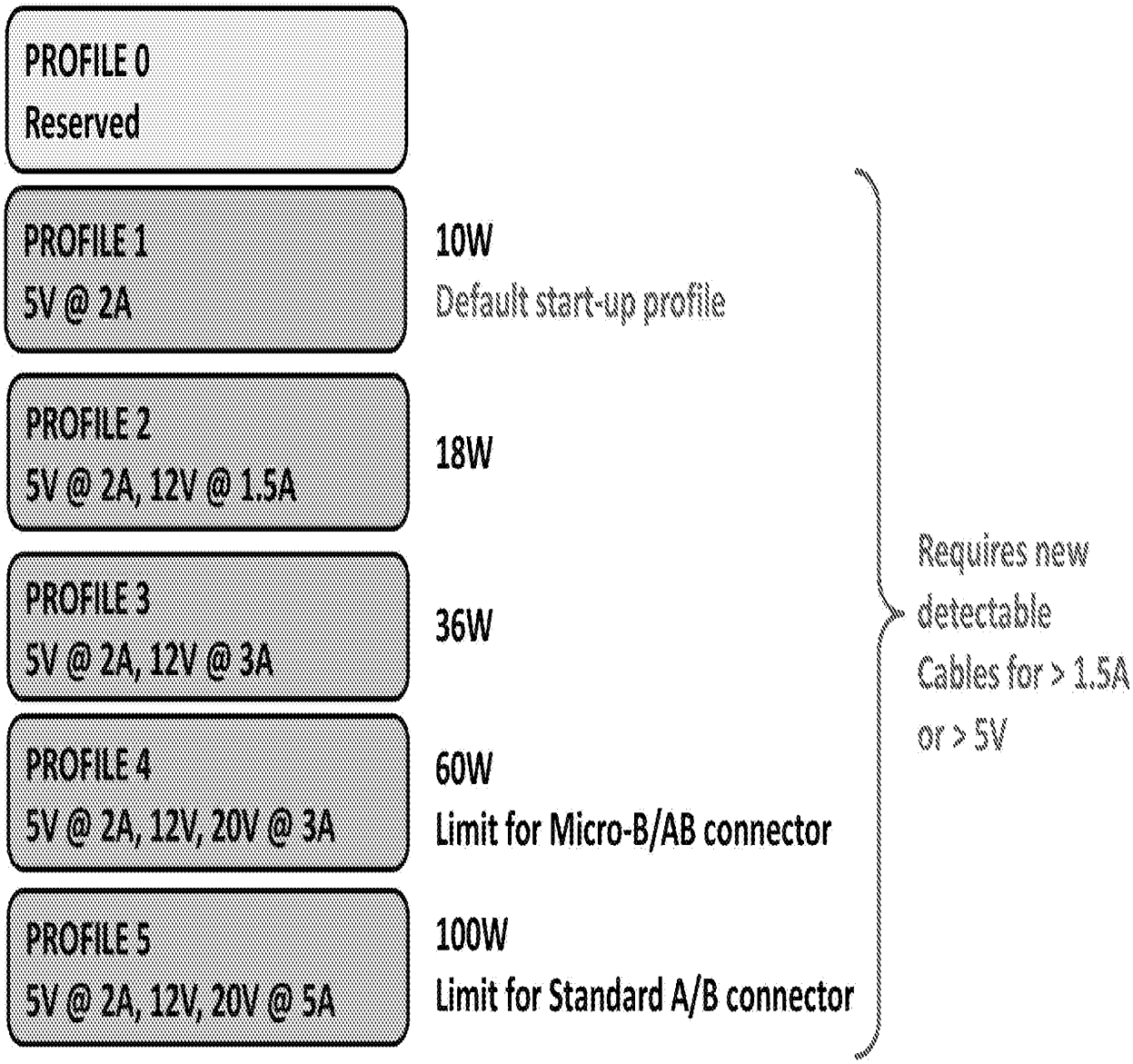
Target Requirements

Focus Area	Requirements
Compatibility and coexistence	• Work equally well with USB 2.0 and USB 3.0 • Coexists with On-The-Go and battery charging operations • Minimize issues with non-compliant cabling, e.g. limit higher voltage use to known cables
Power	• Existing cables: up to 7.5W • PD-aware cables: up to 100W (defined by profiles)
Negotiation	• Over V_{BUS} only, no data line usage or reliance
Start-up	• Legacy 5V V_{BUS} start, voltage / current adjust after negotiation • Dead Battery detection and charging
Policy	• Default policies built-in for hardware-only starts • Software interface enables more advanced policies
User experience	• Expose power delivery status to OS • Support features to eliminate silent failures

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Source capabilities organized as profiles

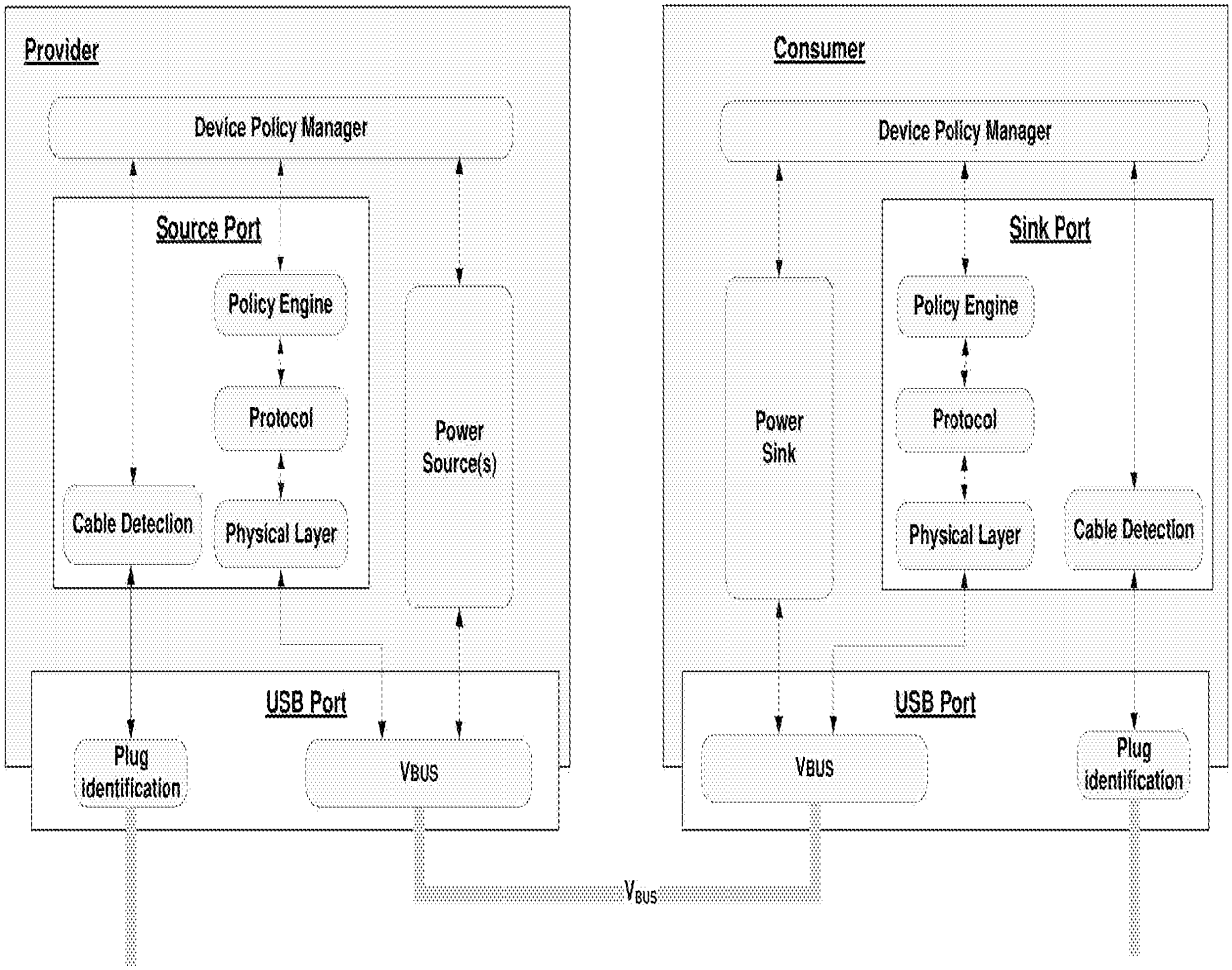


- Additional capabilities possible as optional extensions to standard profiles

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Carku v. NOCO, IPR2020-00944
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Architecture



Carku, Exhibit 1045
Carku v. NOCO, IPR2020-00944
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Summary

- Power Delivery specification is available as part of the USB 3.0 and USB 2.0 download packages http://www.usb.org/developers/docs/
- Expecting first products towards the end of 2012.
- We encourage manufacturers to build products taking advantage of this technology.

Carku, Exhibit 1045
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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

THE NOCO COMPANY, INC., Plaintiff, v. SHENZHEN DIKA NA'ER E-COMMERCE CO., LTD., Defendant.	Lead Case No. 1:17-cv-02282 Judge Christopher A. Boyko
THE NOCO COMPANY, INC., Plaintiff, v. SHENZHEN CHANGXINYANG TECHNOLOGY CO., LTD., Defendant.	Case No. 1:17-cv-02209 Judge Christopher A. Boyko
THE NOCO COMPANY, INC., Plaintiff, v. SHENZHEN VALUELINK E-COMMERCE CO., LTD., Defendant.	Case No. 1:17-cv-02210 Judge Christopher A. Boyko

DEFENDANTS' AMENDED FINAL INVALIDITY AND UNENFORCEABILITY CONTENTIONS

Pursuant to L.P.R. 3-5, 3-6, 3-10, and the Court's order on September 17, 2019 (Dkt. No. 67), Defendants Shenzhen Dika Na'er E-Commerce Co., Ltd., Shenzhen Changxinyang

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Technology Co., Ltd., and Shenzhen Valuelink E-Commerce Co., Ltd. (collectively, "Defendants") provides the following amended joint final invalidity and unenforceability contentions with respect to U.S. Patent No. 9,007,015 (the "'015 Patent).

L.P.R. 3-5(a)

Defendants identify the follow prior art reference which anticipate and/or render obvious claims 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21 and 23 of the '015 Patent:

U.S. Patent No. 7,345,450 to Krieger ("Krieger"), issued March 18, 2008.
U.S. Patent No. 9,506,446 to Xinfang ("Xinfang"), issued November 29, 2016.
U.S. Patent No. 6,426,606 to Purkey ("Purkey"), issued July 30, 2002.
U.S. Patent No. 8,072,900 to Brown ("Brown"), issued December 13, 2011.
U.S. Patent No. 9,525,297 to Wang ("Wang'), issued December 20, 2011.
U.S. Patent No. 5,650,974 to Yoshimura ("Yoshimura") issued July 22, 1997.
The Powerall PBJS12000RD Jump Starter ("Powerall Jump Starter"), offered for sale by Gryphon Mobile Electronics at least as early as November 5, 2013.
The Lightning 12V Jump Starter ("Lightning Jump Starter"), offered for sale by Pilot, Inc. at least as early as March 2014.
The L3 Model Jump Starter, offered for sale by Shenzhen Tsevie Company at as early as May 19, 2019.

L.P.R. 3-5(b)

As per L.P.R. 3-5(b), Defendants identify the following claims as being anticipated or rendered obvious by the prior art cited herein, the grounds for which are cited fully in the accompanying exhibits. Claims 1, 2, 3, 9, 10, 12, 13, 14, 15, 17, 21 and 23 are anticipated under 35 U.S.C. § 102 by the Lightning 12V Jump Starter ("Lightning Jump Starter) made and offered for sale by Pilot, Inc. before the effective filing date of the '015 Patent. In the alternative, claims 1, 2, 3, 9, 10, 12, 13, 14, 15, 17, 21 and 23 are rendered obvious under 35. U.S.C. § 103 by the

Lightning Jump Starter itself or by the Lightning Jump Starter in view of Krieger. Claims Claim 11 is rendered obvious under 35. U.S.C. § 103 by Lightning Jump Starter in view of Xinfang. Claims 19 and 20 are rendered obvious under 35. U.S.C. § 103 by Lightning Jump Starter in view of Purkey. *See* Ex. A. Claims 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 17, 21 and 23 are rendered obvious under 35. U.S.C. § 103 by Krieger in view of Xinfang. Claims 19 and 20 are rendered obvious under 35. U.S.C. § 103 by Krieger in view of Xinfang and Purkey. *See* Ex. B. Claims 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21, and 23 are rendered obvious under 35 U.S.C. § 103 by Purkey in view of Xinfang. *See* Ex. C. Claims 1, 2, 3, 10, 11, 12, 13, 14, 15, 20 and 23 are rendered obvious under 35 U.S.C. § 103 by Brown in view of Wang and Xinfang. *See* Ex. D. Claims 1, 2, 3, 9, 10, 12, 13, 14, 15, 17, 19, 20, 21, and 23 are anticipated under 35 U.S.C. § 102 by the Powerall PBJS12000RD. In the alternative, claims 1, 2, 3, 9, 10, 12, 13, 14, 15, 17, 19, 20, 21, and 23 are rendered obvious under 35 U.S.C. § 103 by the Powerall PBJS12000RD. *See* Ex. E. Claims 1, 9, and 17 are obvious under 35 U.S.C. § 103 by Krieger in view of Yoshimura. *See* Ex. F. Claims 1, 2, 3, 9, 10, 11, 12, 13, 14, 15, 17, 21 and 23 are rendered obvious under 35. U.S.C. § 103 by Krieger in view of Xinfang and in view of Yoshimura. *See* Ex. G.

L.P.R. 3-5(c)

As per L.P.R. 3-5(c), Defendants hereby produce the attached charts marked Exhibits A – G.

L.P.R. 3-5(d)

Defendants state that claim 3 is invalid as indefinite under 35 U.S.C. § 112(b). In addition, claims 1, 2, 3, 9, 10, 12, 13, 14, 15, 17, 19, 20, 21 and 23 are invalid under 35 U.S.C. § 112(a) as they all fail to meet the written description and enablement requirement. More specifically, the reverse polarity sensor circuitry disclosed in the '015 is erroneous and will not enable a person of

ordinary skill in the art to practice the disclosed inventions. For example, due to the presence of diode D8, the optocoupler LED 11 of the reverse sensor 10 will provide a "1" or high output signal to the MCU 1 even if the car battery 72 is connected to the handheld booster device with reverse polarity.

L.P.R. 3-5(e)

Defendants do not assert that the '015 Patent is unenforceable at this time. However, Defendants reserve the right to assert such should any facts come to light during the course of discovery.

L.P.R. 3-6(a)

Defendants have produced documents bates labeled DNIC - 000039 through DNIC - 000610. Additional documents have been produced by Pilot, Inc. (bates labeled Pilot_Shen_00000001 through Pilot_Shen_00001441) and Gryphon Mobile Electronics, LLC.

L.P.R. 3-6(b)

Defendants state that they currently have no documents relevant to L.P.R. 3-5(e).

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Dated: September 23, 2019

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OF COUNSEL

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Shenzhen Dika Na'er E-Commerce Co., Ltd.
Shenzhen Changxinyang Technology Co., Ltd., and
Shenzhen Valuelink E-Commerce Co.

CERTIFICATE OF SERVICE

I hereby certify that all counsel of record are being served today with a copy of this document via electronic mail.

September 23, 2019 */s/ Timothy Wang*
Timothy Wang

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IPR2025-00885

Marc A. Karish (State Bar No. 205440)
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Attorneys for Defendant
TII TRADING INC.

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

THE NOCO COMPANY, INC., an Ohio Corporation, Plaintiffs, vs. TII TRADING INC., a California Corporation; and DOES 1 – 10, inclusive, Defendants.	Case No. 2:19-cv-07127-PSG-E **DEFENDANT TII TRADING INC.'S INVALIDITY CONTENTIONS**

ADC EX1002
IPR2025-00885

Defendant TII TRADING INC. ("Defendant"), pursuant to the Court's Order Granting Joint Stipulation of Pretrial and Trial Dates (Dkt. No. 37) and Northern District of California Local Patent Rules 3-3 and 3-4, hereby provides disclosure of invalidity contentions with respect to asserted claims 1-3, 8-15, 17 and 19-20 of U.S. Patent No. 9,007,015 (the "'015 Patent").

The following invalidity contentions are based upon information and documents presently available to Defendant and its attorneys. Discovery is ongoing and Defendant expects to receive additional relevant information from Plaintiff in view of the Court's entry of the parties' stipulated protective order on May 11, 2020 (Dkt. No. 39). Additionally, these contentions are made prior to the Court's construction of terms in the asserted claims. Defendant anticipates that discovery and other events in this litigation may cause it to revise, supplement, and/or modify these contentions and therefore makes this disclosure without prejudice to doing so.

Local Patent Rule 3-3(a)

Defendant identifies the following prior art reference which anticipate and/or render obvious claims 1-3, 8-15, 17 and 19-20 of the '015 Patent:

U.S. Patent Application Publication No. 2013/0154543 to Richardson et al. ("Richardson"), published June 20, 2013.
Chinese Utility Model Patent CN202696190U to Zhang et al ("Zhang"), published January 23, 2013.
U.S. Patent No. 5,650,974 to Yoshimura ("Yoshimura") issued July 22, 1997.
U.S. Patent No. 6,426,606 to Purkey ("Purkey"), issued July 30, 2002.
U.S. Patent No. 7,345,450 to Krieger ("Krieger"), issued March 18, 2008.

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U.S. Patent No. 8,076,900 to Brown ("Brown"), issued December 13, 2011.
U.S. Patent No. 9,506,446 to Xinfang ("Xinfang"), issued November 29, 2016.
U.S. Patent No. 9,525,297 to Wang ("Wang'), issued December 20, 2011.
U.S. Patent No. 9,954,391 to Lei ("Lei"), issued April 24, 2018.

Local Patent Rule 3-3(b)

As per L.P.R. 3-3(b), Defendants identify the following claims as being anticipated or rendered obvious by the prior art cited herein, the grounds for which are cited fully in the accompanying exhibits. Claims 1, 8-9, 15 and 17-20 are anticipated under 35 U.S.C. § 102 by Richardson. Claims 2, 3 and 12-14 are rendered obvious under 35 U.S.C. § 103 by Richardson in view of Lei. Claims 10-13 are rendered obvious under 35 U.S.C. § 103 by Richardson in view of the Xinfang. See Ex. A.

Claims 1, 8, 9, 17, 19 and 20 are anticipated under 35 U.S.C. § 102 by Zhang. Claims 2, 3, 10, 11, 12, 13, 14, and 15 are rendered obvious under 35. U.S.C. § 103 by Zhang in view of Xinfang. See Ex. B.

Claims 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, and 17 are rendered obvious under 35. U.S.C. § 103 by Krieger in view of Xinfang. Claims 19 and 20 are rendered obvious under 35. U.S.C. § 103 by Krieger in view of Xinfang and Purkey. *See* Ex. C.

Claims 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19 and 20 are rendered obvious under 35 U.S.C. § 103 by Purkey in view of Xinfang. *See* Ex. D.

Claims 1, 2, 3, 10, 11, 12, 13, 14 and 15 are rendered obvious under 35 U.S.C. § 103 by Brown in view of Wang and Xinfang. *See* Ex. E.

Claims 1, 9, and 17 are obvious under 35 U.S.C. § 103 by Krieger in view of Yoshimura. *See* Ex. F.

Claims 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15 and 17 are rendered obvious under 35. U.S.C. § 103 by Krieger in view of Xinfang and in view of Yoshimura. *See* Ex. G.

Local Patent Rule 3-3(c)

As per L.P.R. 3-3(c), Defendant hereby produces the attached charts marked as Exhibits A – G.

Local Patent Rule 3-3(d)

Defendant states that claims 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19 and 20 are invalid under 35 U.S.C. § 112 as they all fail to meet the written description and enablement requirement. More specifically, the reverse polarity sensor circuitry disclosed in the '015 is erroneous and will not enable a person of ordinary skill in the art to practice the disclosed inventions. For example, due to the presence of diode D8, the optocoupler LED 11 of the reverse sensor 10 will provide a "1" or high output signal to the MCU 1 even if the car battery 72 is connected to the handheld booster device with reverse polarity.

Local Patent Rule 3-4(a)

Defendant has previously produced documents bates labeled TII03034 through TII03044.

Local Patent Rule 3-4(b)

Defendant is producing herewith documents bates labeled TII03061 through

TII03351.

Local Patent Rule 3-4(c)

Defendant is currently unaware of any agreements that it contends are comparable to a license that would result from a hypothetical reasonable royalty negotiation. However, Defendant reserves the right to assert that agreements are comparable to a license that would result from a hypothetical reasonable royalty negotiation should any such agreements come to light during the course of discovery.

Local Patent Rule 3-4(d)

Defendant has previously produced documents bates labeled TII03045 through TII03060.

Local Patent Rule 3-4(e)

Defendant is currently unaware of any agreements that may be used to support Defendant's damages case. However, Defendant reserves the right to assert that agreements are relevant to Defendant's damages case should any such agreements come to light during the course of discovery.

Dated: June 11, 2020

Respectfully submitted,

By: */s/ Marc Karish*
A. Eric Bjorgum
Marc Karish
KARISH & BJORGUM PC
Attorneys for Defendant
TII TRADING INC.

PROOF OF SERVICE

STATE OF CALIFORNIA, COUNTY OF LOS ANGELES

1. At the time of service I was over 18 years of age and **not a party to this action**.
2. My business address is: 119 E. Union Street, Suite B, Pasadena, CA 91103
3. On **June 11, 2020** served the following document(s):

1. DEFENDANT TII TRADING INC.'S INVALIDITY CONTENTIONS

1. I served the documents on the **persons** below, as follows:

MICHAEL J. GARVIN (pro hac vice)
mjgarvin@vorys.com
AARON M. WILLIAMS (pro hac vice)
amwilliams@vorys.com
PATRICK R. AKERS (pro hac vice)
prakers@vorys.com
VORYS, SATER, SEYMOUR AND PEASE LLP
200 Public Square, Ste. 1400
Cleveland, OH 44114
Tel.: (216) 479-6060

KATHLEEN O. PETERSON (email only)
kpeterson@catespeterson.com
CATES PETERSON LLP
4100 Newport Place, Suite 230
Newport Beach, CA 92660
Tel.: (949) 724-1180
Fax: (949) 724-1190

Attorneys for Plaintiff
THE NOCO COMPANY, INC.

The names, addresses, and other applicable information about the persons served is on Attachment "B."

2. The documents were served by the following means (specify):

a. **By personal service**. I personally delivered the documents to the persons at the addresses listed in Item 4. (1) For a party represented by an attorney, delivery was made to the attorney or at the attorney's office by leaving the documents in an envelope or package clearly labeled to identify the attorney being served with a receptionist or an individual in charge of the office. (2) For a party, delivery was made to the party or by leaving the documents at the party's residence with some person not less than 18 years of age between the hours of eight in the morning and six in the evening.

b. X **By United States mail**. I enclosed the documents in a sealed envelope or package addressed to the persons at the addresses in Item 4 and (specify one):

(1) **deposited** the sealed envelope with the United States Postal Service, with the

postage fully prepaid.

(2) X **placed** the envelope for collection and mailing, following our ordinary business practices. I am readily familiar with this business's practice for collecting and processing correspondence for mailing. On the same day that correspondence is placed for collection and mailing, it is deposited in the ordinary course of business with the United States Postal Service in a sealed envelope with postage fully prepaid.

I am a resident or employed in the county where the mailing occurred. The envelope or package was placed in the mail at Los Angeles, California.

c. **X** **By Email.**

g . **By E-FILING**. Pursuant to Central District of California court order this case is designated for E-Filing as of November 1, 2007. The document will be so E-Filed and a "Notification of E-Filing" will be e-mailed by the Court to all registered attorneys.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. I further declare that I am employed in the office of a member of the bar of this Court, at whose direction the service was made.

Executed on June 11, 2020, at Pasadena, CA

/s/ Shaholonie Newsome
Shaholonie Newsome

AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the Northern District of Ohio, Eastern Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
1:20-cv-01170	5/28/2020	for the Northern District of Ohio, Eastern Division

PLAINTIFF	DEFENDANT
The NOCO Company, Inc.	Zhejiang Quingyou Electronic Commerce Co., Ltd.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	9,007,015	4/14/2015	The NOCO Company, Inc.
2			
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the Northern District of Ohio, Eastern Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
1:20-cv-01171	5/28/2020	for the Northern District of Ohio, Eastern Division

PLAINTIFF	DEFENDANT
The NOCO Company, Inc.	Shenzhen GOOLOO E-Commerce Co., Ltd.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	9,007,015	4/14/2015	The NOCO Company, Inc.
2			
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the Northern District of Ohio, Eastern Division on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
1:20-cv-01174	5/28/2020	for the Northern District of Ohio, Eastern Division

PLAINTIFF	DEFENDANT
The NOCO Company, Inc.	Aukey Technology Co., Ltd.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	9,007,015	4/14/2015	The NOCO Company, Inc.
2			
3			
4			
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

P/00/038
Sections 59, 104(4), 223(6), 75 and 101M
Regulation 22.21

AUSTRALIA
Patents Act 1990

Notice of Opposition

We, Brown & Watson International Pty Ltd of 1500 Ferntree Gully Road, Knoxfield, Victoria 3180 give notice that we oppose the grant of a patent in respect of patent Application No. 2019201559 in the name of The NOCO Company.

Address for service and correspondence in Australia is:

Phillips Ormonde Fitzpatrick
333 Collins Street
Melbourne Victoria 3000
Telephone No.: (03) 9614 1944 Facsimile No.: (03) 9614 1867

Reference: 2019201559

Email address for sharing of evidence and documents:

attorney@pof.com.au

Dated: 21 February 2020

PHILLIPS ORMONDE FITZPATRICK

Attorneys for:
Brown & Watson International Pty Ltd

Hwth fee: $600

ADC EX1002
IPR2025-00885

This data, for application number 2019201559, is current as of 2021-03-23 21:00 AEST

dompatent von Kreisler

dompatent von Kreisler | P.O. Box 10 22 41 | 50462 Köln/Germany

Deutsches Patent- und Markenamt
Zweibrückenstraße 12
80331 München

Kontakt:
Dr. Alexander Schuld aschuld@dompatent.de
Tel.:
+49 221 91652-207

Unser Zeichen:
203165DE Gh/Sld/ZW/mg

1. März 2021

Einspruch gegen das deutsche Patent 10 2014 114 997
Patentinhaberin: The NOCO Company
Einsprechende: Shenzhen CARKU Technology Co., Ltd.

Namens und im Auftrag der

Shenzhen CARKU Technology Co., Ltd.
Building A, Qixing Creative Square, Lianrun Rd., Gaofeng
Community, Dalang Street,
Longhua, Shenzhen,
Guangdong
VR CHINA

wird hiermit

E I N S P R U C H

gegen das deutsche Patent 10 2014 114 997 eingelegt.

Die Entrichtung der amtlichen Einspruchsgebühr in Höhe von

Köln
Patentanwälte | Patent Attorneys
Jochen Hilleringmann, Dipl.-Ing.
Dr. Hans-Peter Jönsson, Dipl.-Chem.
Dr. Thomas Weber, Dipl.-Chem.
Dr. Jörg Helbing, Dipl.-Chem.
Alexander von Kirschbaum, Dipl.-Ing.
Dr. Christoph Schreiber, Dipl.-Chem.
Dr. Thomas Escher, Dipl.-Chem.
Constantin Rühland, Dipl.-Ing.
Florian Krüger, Dipl.-Ing.
Kerstin Renner, Dipl.-Ing.
Andreas Gagidis, Dipl.-Ing. (BA)
Dr. Eva Bock, Dipl.-Chem., LL.M.
Dr. Marius Vieweg, Dipl.-Phys.
Dr. Anke Krebs, Dipl.-Chem., LL.M.
Dr. Alan Stewart, B.Sc. (Hons) Chem.
Dr. Alexander Schuld, Dipl.-Ing.
Dr. Reza Ghadiri, Dipl.-Ing.
Thomas Henzler, M.Sc. RWTH, M.Sc. Tsinghua Ing.
Dr. Tobias Timmerscheidt, MSc ETH Chem., LL.B.

Rechtsanwälte | Attorneys at Law
Dr. Felix Hauck, LL.M.
Dr. Alexander Theis, LL.M.
WanZe Zhang, LL.M.

Of Counsel
Patentanwälte | Patent Attorneys
Georg Dallmeyer, Dipl.-Ing.
Dr. Hans-Wilhelm Meyers, Dipl.-Chem.

ADC EX1002
IPR2025-00885

EURO 200,00 erfolgt mittels SEPA-Lastschrift. Das Dauermandat [redacted] liegt amtsseitig vor. Die Angaben zum Verwendungszweck (Vordruck A9532) liegen bei.

Es wird beantragt, das deutsche Patent 10 2014 114 997 in vollem Umfang zu widerrufen, und zwar aufgrund mangelnder Patentfähigkeit seines Gegenstandes (Hauptantrag).

Hilfsweise wird beantragt, eine mündliche Verhandlung anzuberaumen, falls dem Hauptantrag nicht bereits im schriftlichen Verfahren stattgegeben werden kann.

I. Stand der Technik

Der vorliegende Einspruch stützt sich auf die nachfolgend aufgelisteten Druckschriften:

D1 US 8 493 021 B2
D2 EP 2 472 698 A2
D3 DE 20 2013 102 599 U1
D4 US 4 910 628 A
D5 DE 295 07 501 U1
D6 DE 20 2009 016 260 U1
D7 US 7 148 580 B2
D8 US 8 172 603 B1
D9 US 6 822 425 B2
D10 US 6 212 054 B1
D11 US 5 820 407 A
D12 US 6 632 103 B1
D13 US 5 189 359 A
D14 US 5 795 182 A

D15 US 6 262 492 B1

D16 US 5 635 817 A

D17 US 8 199 024 B2

D18 US 5 793 185 A

D19 US 2004/0130298 A1

D20 US 2007/0285049 A1

D21 Werbekatalog der Einsprechenden, übermittelt an die Patentinhaberin am 22. Dezember 2013

D22 Werbekatalog der Einsprechenden, übermittelt an eine Kundin am 23. April 2014

D23 SGS Testbericht betreffend mehrere Starthilfevorrichtungen der Einsprechenden, datiert vom 21. April 2014

D24 TW M417714 U1

D24a Maschinenübersetzung der D24

D25 Datenblatt der TOPCOM TECHNOLOGY CO., LTD. zu dem Produkt "Universal Power Bank", datiert vom 15. November 2011

D26 US 2013/0154543 A1

D27 US 2008/0150473 A1

D28 Werbekatalog der Einsprechenden, übermittelt an eine Kundin im Oktober 2013

Die Druckschriften D1 bis D11 wurden von der Prüfungsstelle im Prüfungsverfahren zitiert angeführt. Die Dokumente D12 bis D18 wurden von der Patentinhaberin in der Beschreibungseinleitung des Streitpatents zitiert. Bei den Dokumenten D19 bis D26 handelt es sich um zusätzlichen druckschriftlichen Stand der Technik, welcher im Prüfungsverfahren nicht berücksichtigt wurde.

II. Streitpatent

Das deutsche Patent 10 2014 114 997 (als **Anlage A1** beigefügt und nachfolgend

als **Streitpatent** bezeichnet) wurde am 15. Oktober 2014 eingereicht und beansprucht die Priorität der internationalen Patentanmeldung WO 2016/003471 A1 (als **Anlage A2** beigefügt und nachfolgend als **Prioritätsanmeldung** bezeichnet), die am 3. Juli 2014 beim USPTO eingereicht wurde.

Die Erteilung des Streitpatents wurde am 15. Oktober 2020 veröffentlicht.

Das Streitpatent betrifft eine tragbare Starthilfevorrichtung für Fahrzeugbatterien (siehe Titel des Streitpatents). Starthilfevorrichtungen erlauben es, eine verbrauchte oder entladene Batterie eines Fahrzeuges aufzuladen. Aus dem Stand der Technik sind bereits Starthilfevorrichtungen bekannt, die eine geladene Batterie aufweisen und die über ein Kabelpaar mit der Startvorrichtung des Fahrzeugmotors verbunden werden können (siehe Absatz [0001] des Streitpatents).

Im Streitpatent ist das Problem bei bislang bekannten Starthilfevorrichtungen erläutert, wenn die Kabel der Starthilfevorrichtungen irrtümlich kurzgeschlossen oder mit einer falschen Polung angeschlossen werden. In diesen Fällen kann es zu einer Funkenbildung und einer Beschädigung der Batterien und/oder zu einem körperlichen Schaden des Benutzers kommen (siehe Absatz [0002] des Streitpatents).

Aus dem Stand der Technik sind bereits diverse Lösungen für die genannten Probleme bekannt. Die in dem Streitpatent beschriebene technische Lehre zielt darauf ab, etwaige Defizite des Standes der Technik (Komplexität, Kosten oder Anfälligkeit der bekannten Vorrichtungen) zu beheben (siehe Absatz [0013] des Streitpatents).

Das Streitpatent umfasst insgesamt 21 Ansprüche, wobei Anspruch 1 als unabhängiger Anspruch formuliert ist und die Ansprüche 2 bis 21 auf den

dompatent

unabhängigen Anspruch 1 unmittelbar bzw. mittelbar rückbezogen sind.

Der unabhängige Anspruch 1 umfasst dabei die folgend wiedergegebenen Merkmale und lässt sich wie folgt gliedern:

1 Vorrichtung zur Starthilfe eines Fahrzeugmotors, umfassend:

1.1 eine interne Spannungsversorgung (32), die eine Lithiumionenbatterie (32) umfasst;

1.2 einen positiv und negativ gepolte Ausgänge (CB-, CB+) aufweisenden Ausgangsanschluss (303), der mit einer Kabelvorrichtung (400) verbindbar ist,

1.3 einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Ausgängen (CB-, CB+) in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist,

1.4 weiter ist der Fahrzeugbatterie-Isolationssensor (12) mit einem Mikrokontroller (1) verbunden,

1.5 einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Ausgängen (CB-, CB+) verbunden ist, und zur Detektion der Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist, wobei der Verpolungssensor (10) zum Ausgeben eines Eingabesignals für den Mikrocontroller (1) konfiguriert ist, das anzeigt, ob die Fahrzeugbatterie (72) mit passender Polung angeschlossen ist;

1.6 einen Leistungs-FET-Schalter (15), der zwischen der internen Spannungsversorgung (32) und dem Ausgangsanschluss (303) angeschlossen ist; und

1.7.1 wobei der programmierbare Mikrocontroller (1) zum Empfangen eines Eingabesignals vom Fahrzeug-Isolationssensor (12) und des Eingabesignals vom Verpolungssensor (10) und zum Bereitstellen eines Ausgabesignals an den Leistungs-FET-Schalter (15) so konfiguriert ist, dass der Leistungs-FET-Schalter (15) als Antwort auf die Eingabesignale des Isolationssensors (12) und des Verpolungssensors (10), die das Vorhandensein einer Fahrzeugbatterie (72) am Ausgangsanschluss (303) und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie (72) mit positiv und negativ gepolten Ausgängen (CB-, CB+) anzeigen, eingeschaltet wird, um die interne Spannungsversorgung (32) mit dem Ausgangsanschluss (303) zu verbinden, und

1.7.2 als Antwort auf die Eingabesignale der Sensoren nicht eingeschaltet wird, wenn die Eingabesignale der Sensoren anzeigen, dass die Fahrzeugbatterie (72) entweder nicht mit der Starthilfevorrichtung verbunden ist oder die Fahrzeugbatterie (72) verpolt mit der Starthilfevorrichtung verbunden ist,

1.8 wobei die Starthilfevorrichtung weiter umfasst: einen USB-Ladeanschluss (52) zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die interne Spannungsversorgung (32).

Die Merkmalsgliederung des Anspruchs 1 ist als **Anlage A3** beigefügt.

Eine konkrete Ausführungsform der im Anspruch 1 definierten Starthilfevorrichtung ist in der im Folgenden eingeblendeten Fig. 1 des Streitpatents wiedergegeben:

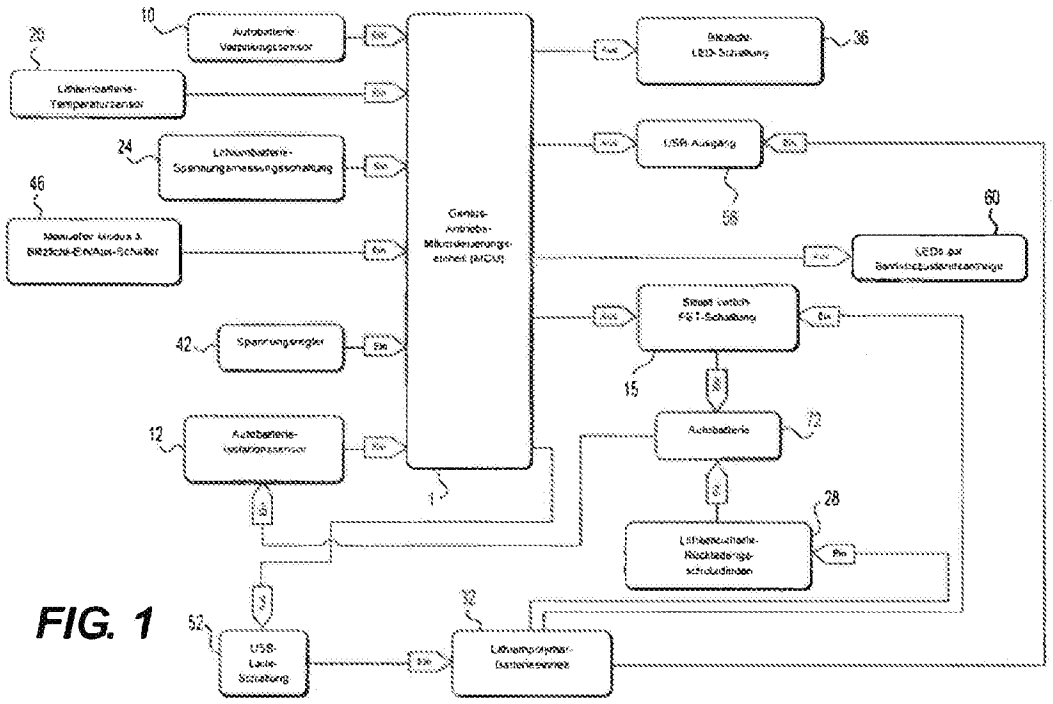


FIG. 1

Die in der Fig. 1 gezeigte Starthilfevorrichtung weist neben dem Isolationssensor und dem Verpolungssensor, die gemäß dem Hauptanspruch zwingend vorgesehen sind, noch weitere optionale Sensoren auf.

Die abgebildete Starthilfevorrichtung ist insbesondere dazu ausgelegt zu erkennen, ob eine Batterie mit korrekter Polung angeschlossen ist. Nur wenn dies der Fall ist, wird der FET-Schalter aktiviert, sodass die entladene Batterie geladen werden kann. Sofern keine Batterie angeschlossen ist oder aber eine Batterie mit einer falschen Polung angeschlossen ist, wird der FET-Schalter deaktiviert, sodass der elektrische Kontakt zwischen der Starthilfevorrichtung und der entladenen Batterie unterbrochen wird.

Im Prüfungsverfahren vor dem Deutschen Patent- und Markenamt kam die

Prüfungsstelle in den Bescheiden vom 30. Juni 2015 sowie vom 8. März 2017 zu dem Ergebnis, dass die seinerzeit beanspruchte Fassung der vermeintlichen Erfindung nicht erteilungsfähig war, da der beanspruchte Gegenstand durch den im Verfahren zitierten Stand der Technik nahegelegt und/oder unzulässig erweitert war.

Im weiteren Prüfungsverfahren wurde die Anmelderin zu einer mündlichen Anhörung am 5. Dezember 2019 geladen. Für die mündlichen Anhörung waren im Vorfeld diverse Anspruchsfassungen gemäß dem Hauptantrag der Patentinhaberin sowie gemäß fünf weiteren Hilfsanträgen zu erörtern. In der Ladung zur mündlichen Anhörung, datiert vom 26. November 2019 (als **Anlage A4** beigefügt) kam die Prüfungsstelle zu dem Ergebnis, dass keiner der eingereichten Anträge gewährbar war, da der Gegenstand sämtlicher Ansprüche unzulässig erweitert (§ 38 PatG) war und/oder nicht auf einer erfinderischen Tätigkeit beruhte (§ 4 PatG).

Auch in der mündlichen Anhörung konnten seitens der Patentinhaberin keine Argumente vorgebracht werden, welche die Gewährbarkeit der anhängigen Anträge zu begründen vermochten. Im Nachgang zu der mündlichen Anhörung reichte die Anmelderin mit Schreiben vom 17. April 2020 neue Patentansprüche ein, wobei im neuen Anspruch 1 im Wesentlichen konkretisiert wurde, dass die beanspruchte Starthilfevorrichtung zusätzlich

> einen USB-Ladeanschluss zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die interne Spannungsversorgung

umfasst. Das Schreiben der Patentinhaberin vom 17. April 2020 (einschließlich der dem Schreiben beigefügten Ansprüche) wird als **Anlage A5** beigefügt.

Nach Aufnahme des zuvor wiedergegebenen Merkmals, das dem Merkmal 1.8 in

der beigefügten Merkmalsgliederung entspricht, erfolgte die Erteilung des Streitpatents. Allem Anschein nach wurde das Streitpatent erteilt, da nach Einschätzung der Prüfungsstelle die im Prüfungsverfahren zitierten Druckschriften das Merkmal betreffend den USB-Ladeanschluss nicht vorwegnahmen.

Wie nachfolgend noch im Detail erörtert wird, kann jedoch auch der USB-Ladeanschluss gemäß Merkmal 1.8 die Patentfähigkeit des im Streitpatent beanspruchten Gegenstandes nicht begründen.

III. Mangelnde Patentfähigkeit des Hauptanspruchs § 21 PatG i. V. m. § 4 PatG

1. Mangelnde erfinderische Tätigkeit gegenüber der D10

In der Ladung vom 26. November 2019 (Anlage A4) zur mündlichen Anhörung, kam die Prüfungsstelle richtigerweise zu dem Ergebnis, dass zumindest der Gegenstand der Merkmale 1 bis 1.7.2 des unabhängigen Anspruchs 1 durch die D10 nahegelegt ist.

Aus der D10 ist bereits Folgendes bekannt (die in eckigen Klammern angegebenen Referenzstellen beziehen sich auf die D10):

1 Vorrichtung zur Starthilfe eines Fahrzeugmotors [erster Satz der Zusammenfassung], umfassend:

1.1 eine interne Spannungsversorgung [zweiter Satz der Zusammenfassung: "battery", Fig. 4: "internal battery"], ~~die eine Lithiumionenbatterie umfasst~~;

1.2 einen positiv und negativ gepolte Ausgänge aufweisenden Ausgangsanschluss, der mit einer Kabelvorrichtung verbindbar ist [Fig. 4: "positive

clip" und "negative clip"],

1.3 einen Fahrzeugbatterie-Isolationssensor [Fig. 4: Schaltanordnung umfassend Q1-Q5 sowie D3 und LED1], der mit den positiv und negativ gepolten Ausgängen in einer Schaltung verbunden ist [Fig. 4: "positive clip" und "negative clip"], und zur Detektion des Vorhandenseins einer Fahrzeugbatterie, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, konfiguriert ist [Sp. 7, Z. 56–67 sowie Sp. 8, Z. 21–39],

1.4 weiter ist der Fahrzeugbatterie-Isolationssensor ~~mit einem Mikrokontroller~~ verbunden,

1.5 einen Verpolungssensor [Fig. 4: Schaltanordnung umfassend OC1, BZ1, R11 und LED 2], der in einer Schaltung mit den positiv und negativ gepolten Ausgängen [Fig. 4: "positive clip" und "negative clip"] verbunden ist, und zur Detektion der Polarität der Fahrzeugbatterie, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, konfiguriert ist [Sp. 8, Z. 45–52], wobei der Verpolungssensor zum Ausgeben eines ~~Eingabe~~signals ~~für den Mikrocontroller~~ konfiguriert ist, das anzeigt, ob die Fahrzeugbatterie mit passender Polung angeschlossen ist [Sp. 8, Z. 45–52];

1.6 einen Leistungs-~~FET-~~Schalter [Fig. 4: K1 SOLENOID], der zwischen der internen Spannungsversorgung [Fig. 4: "internal battery"] und dem Ausgangsanschluss [Fig. 4: "positive clip" und "negative clip"] angeschlossen ist; und

1.7.1 wobei ~~der programmierbare Mikrocontroller zum Empfangen eines Eingabesignals vom Fahrzeug-Isolationssensor und des Eingabesignals vom Verpolungssensor und zum Bereitstellen eines Ausgabesignals an den Leistungs-FET-Schalter~~ [stattdessen: eine Steuer-Schaltung] so konfiguriert

ist, dass der Leistungs-~~FET~~-Schalter [Fig. 4: K1] als Antwort auf die Eingabesignale des Isolationssensors und des Verpolungssensors, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden [Sp. 7, Z. 56–67], und

1.7.2 als Antwort auf die Eingabesignale der Sensoren nicht eingeschaltet wird, wenn die Eingabesignale der Sensoren anzeigen, dass die Fahrzeugbatterie entweder nicht mit der Starthilfevorrichtung verbunden ist oder die Fahrzeugbatterie verpolt mit der Starthilfevorrichtung verbunden ist [Sp. 7, Z. 56–67; Sp. 8, Z. 21-39 sowie Sp. 8, Z. 45–52].

Zwar zeigt die D10 nicht explizit, dass

- die interne Spannungsversorgung eine Lithiumionenbatterie umfasst,
- der Leistungs-Schalter als FET-Schalter ausgewählt ist und
- ein Mikrocontroller zur Steuerung des Schalters verwendet wird,

jedoch handelt es sich bei den vorstehenden Merkmalen lediglich um eine Aufzählung von Merkmalen, die aus dem Stand der Technik hinlänglich bekannt sind und die in ihrer Kombination keinerlei synergistische Wirkung entfalten.

So ist es beispielsweise aus der D7 bekannt, Starthilfevorrichtungen mit Lithiumionenbatterien bereitzustellen (siehe Fig. 1 i. V. m. Sp. 3, Z. 32-35: "It should be noted that the battery 16 may include a variety of energy sources including lead acid batteries, nickel cadmium batteries, lithium batteries, fuel cells, or others.").

Auch die Verwendung eines FET-Schalters war bereits zum Prioritätstag des Streitpatents bekannt (siehe hierzu D9: Fig. 5, Bezugszeichen 72 i. V. m. Sp. 11, Z. 43-49, sowie D19: Fig. 1, Bezugszeichen 12 i. V. m. [0030], Z. 1-4).

Schließlich stellt die Verwendung eines Mikrocontrollers lediglich eine fachübliche Implementierungsvariante dar, die zum Prioritätstag des Streitpatents bereits aus mehreren Druckschriften hinlänglich bekannt war (siehe hierzu D1: Fig. 1, "system microcontroller 12", D3: Fig. 1, "Mikrocontroller (MCU) 10", D9: Fig. 5, "microprocessor 50", sowie D19: Fig. 5, "microprocessor 60").

Insofern ist der Gegenstand der Merkmale 1 bis 1.7.2 durch die Druckschrift D10 nahegelegt.

Jedoch vermag auch das zusätzliche Merkmal 1.8 (USB-Ladeport zum Bereitstellen einer Ladespannung an die interne Spannungsversorgung) die Patentfähigkeit der beanspruchten Erfindung nicht zu begründen. Dies basiert darauf, dass es für den befassten Fachmann zum Prioritätstag des Streitpatents naheliegend war, die in der D10 beschriebene Starthilfevorrichtung mit einem USB-Ladeport zu versehen und da es zum Prioritätstag bereits üblich war, Starthilfevorrichtungen sowie verwandte Vorrichtungen mit USB-Ausgangs- und Eingangsports bereitzustellen, wie nachfolgend noch erörtert wird.

Zunächst einmal ist es für den Fachmann (vorliegend ein Dipl.-Ingenieur der Fachrichtung Elektrotechnik mit mehrjähriger Erfahrung bei der Entwicklung von Starthilfevorrichtungen für Kraftfahrzeuge) offensichtlich, dass die wiederaufladbaren Batterien der Starthilfevorrichtungen, wie sie in der D10 beschrieben sind, von Zeit zu Zeit aufgeladen werden müssen. Insofern wird der Fachmann bei der Entwicklung einer Starthilfevorrichtung zwangsläufig auch einen Ladeanschluss zum Aufladen der aus der D10 bereits bekannten internen Batterie vorsehen. Dabei wird sich der Fachmann bevorzugt für einen standardisierten Ladeanschluss

entscheiden, damit die Starthilfevorrichtung mit handelsüblichen Ladegeräten kompatibel ist. Zum Zeitpunkt des Prioritätstages waren insbesondere Ladegeräte mit Hohlsteckern (häufig auch als Rundstecker bezeichnet), wie sie oft im Zusammenhang mit Laptops eingesetzt werden, sowie Ladegeräte mit USB-Steckern, die insbesondere für das Aufladen von Smartphones, Tablets und Kameras verwendet werden, weit verbreitet. Vor diesem Hintergrund würde der Fachmann bei der Entwicklung einer Starthilfevorrichtung bevorzugt eine Ladebuchse vorsehen, die entweder für Hohlstecker oder für USB-Stecker ausgelegt ist. Die Auswahl aus den beiden vorstehend genannten Ladebuchsen gehört zu den üblichen Aufgaben des Fachmannes und kann keine erfinderische Tätigkeit begründen. Insbesondere würde der Fachmann einen USB-Ladeport vorsehen, um die Kompatibilität mit den weit verbreiteten USB-Ladegeräten zu gewährleisten. Alternativ würde der Fachmann beide vorstehend genannten Ladeanschlüsse bereitstellen, um die Verwendung sämtlicher geläufiger Ladegeräte zu ermöglichen.

Darüber hinaus sind aus den Druckschriften D3 (siehe Fig. 2 i. V. m. Absatz [0016]: "USB 3.0-Ausgang, Ausgabe von 5V/2A" und Absatz [0018]: Die Not-Startstromversorgung für Fahrzeuge 1 weist ferner eine USB-Ausgabeeinheit 60 auf, die mit dem wiederaufladbaren Lithium-Ionen-Akku 20 und dem Mikrocontroller 10 verbunden ist [...] Das bietet der Not-Startstromversorgung für Fahrzeuge 1 die Funktion der USB-Aufladung an, dadurch können digitale Produkte wie Handy und IPAD usw. aufgeladen werden.") und D20 (Anspruch 6: "further comprising a USB port configured to output DC power") Starthilfevorrichtungen bekannt, bei denen explizit USB-Anschlüsse beschrieben sind, die in den zitierten Druckschriften als Ausgangs-Anschlüsse verwendet werden. Unter Berücksichtigung der USB-Ausgangsanschlüsse der in den Druckschriften D3 und D20 beschriebenen Vorrichtungen ist es für den Fachmann erst recht naheliegend, auch den Eingangs-Ladeanschluss in Form eines USB-Anschlusses auszuführen, um die Kompatibilität mit USB-Ladevorrichtungen zu gewährleisten.

Ferner waren zum Prioritätstag des Streitpatents bereits Starthilfevorrichtungen bekannt, die mit USB-Ladeports versehen waren. Insbesondere hatte die Einsprechende, die selbst zu den größten Herstellern von Starthilfevorrichtungen gehört, bereits spätestens seit Ende 2013 Starthilfevorrichtungen im Sortiment (und hat diese auch aktiv beworben), die mit USB-Ladeports zum Aufladen der internen Spannungsversorgung konfiguriert waren. Insbesondere bei dem Modell mit der Bezeichnung Epower-10 der Einsprechenden handelt es sich um eine Starthilfevorrichtung, die mit einem USB-Ladeport zum Aufladen des internen Akkus ausgestattet ist. Die Epower-10 wurde der Öffentlichkeit über Werbekataloge druckschriftlich vorgestellt, die bereits vor dem Prioritätstag des Streitpatents erstellt und an Kunden und Interessenten ausgeteilt wurden. In diesem Zusammenhang wird auf die D21, die D22 und die D28 verwiesen, auf die nachfolgend näher eingegangen wird.

Die D21 zeigt einen Werbekatalog, der am 22. Dezember 2013, d.h. mehr als sechs Monate vor dem Prioritätstag des Streitpatents, durch die Einsprechende selbst an die Patentinhaberin übermittelt wurde. Auf der Seite 12 des in der D21 gezeigten Kataloges ist die Starthilfevorrichtung E-Power-10 ("The Slimmest Jump Starter") in verschiedenen farblichen Ausführungen abgebildet. Bei den Produktparametern ist ausgeführt, dass die Epower-10 einen Ausgang für 12 V sowie einen Ausgang für 5 V aufweist. Der Fachmann entnimmt diesen Angaben, dass die Epower-10 einen Ausgang für den Anschluss an eine entladene 12 V Batterie aufweist und einen zusätzlichen USB-Ausgang zum Anschluss an ein Smartphone, Tablet, etc. Zudem ist hinsichtlich der Produktparameter ausgeführt, dass die Epower-10 einen Eingang für 5 V aufweist. Dieser Angabe entnimmt der Fachmann, dass die Epower-10 über ein Ladegerät mit einem USB-Ladeanschluss aufgeladen werden kann.

Die D22 zeigt einen weiteren Werbekatalog, der am 23. April 2014 an einen in

der Schweiz ansässigen Kunden (ohne jeglichen Anspruch auf Verschwiegenheit) zugesandt wurde. Auf der Seite 5 ist das Modell Epower-10 abgebildet:



Den technischen Spezifikationen auf der Seite 5 des Werbekataloges ist zu entnehmen, dass die E-Power-10 über einen 14 V und über einen Micro USB 5 V Ladeanschluss verfügt. Die beiden Ladeanschlüsse sind in der obigen Abbildung jeweils links und rechts neben der zentral angeordneten LED zu erkennen. Darüber hinaus verfügt die Starthilfevorrichtung über einen 12 V Ausgang zum Aufladen einer entladenen Batterie sowie einen 5 V (USB) Ausgang zum Aufladen von Smartphones, Tablets und weiteren elektronischen Vorrichtungen. Die Ausgangsanschlüsse sind im äußeren Bereich der Frontseite (neben den Eingangsanschlüssen) zu erkennen.

Insgesamt zeigen die D21 und die D22, dass es zum Prioritätstag des Streitpatents bereits bekannt war, Starthilfevorrichtungen mit einem USB-Ladeport zum Laden der internen Spannungsversorgung zu versehen, um die Kompatibilität mit USB-Ladegeräten zu gewährleisten.

Zudem ist die Starthilfevorrichtung Epower-10 auch in einem weiteren Werbekatalog der Einsprechenden offenbart, wobei der Katalog bereits im Oktober 2013 an eine Kundin der Einsprechenden zugestellt wurde. In diesem Zusammenhang wird auf die D28 verwiesen, aus der erkenntlich ist, dass der entsprechende Katalog spätestens am 21. Oktober 2013 der Kundin der Einsprechenden zugestellt worden war. Die E-Mail vom 21. Oktober 2013 belegt, dass die Einsprechende spätestens seit Oktober 2013 ihre Produkte aktiv beworben hat und dass der Werbekatalog gemäß der D28 zu diesem Zeitpunkt (mehr als 8 Monate vor dem Prioritätstag des Streitpatents) der Öffentlichkeit zugänglich war. Auf Blatt 5 des Werbekataloges ist die Starthilfevorrichtung Epower-10 mit dem vorstehend diskutierten USB-Ladeport gezeigt. Daher beruht der Gegenstand des Anspruchs 1 auch nicht auf einer erfinderischen Tätigkeit gegenüber der D10, D1 oder D19 in Kombination mit der D28.

Ferner zeigt die D23 einen Testbericht (datiert vom 21. April 2014) zu diversen Starthilfevorrichtungen der Einsprechenden. Der Seite 2 des Testberichtes ist zu entnehmen, dass die Starthilfevorrichtungen über eine externe Energieversorgung per USB-Anschluss aufgeladen werden können (Abschnitt "1. Function / Description": "Power source: Powered by external power source via USB port (DC 5 V) [...]"; Abschnitt 2. Ratings: "Power by USB port: 5 V d.c. [...]"). Auch ist auf der Seite 9 des Testberichtes ein Exemplar des E-Power-10 mit zwei Ladekabeln (ein Ladekabel für die Verbindung der Starthilfevorrichtung mit einem Zigarettenanzünderanschluss sowie ein USB-Ladekabel) abgebildet. Schließlich ist auf der Seite 12 eine Seitenansicht einer Starthilfevorrichtung abgebildet, bei der die beiden Ladebuchsen für die Verbindung mit jeweils einem Ladekabel mit einem Hohlstecker sowie mit einem Ladekabel mit einem USB-Stecker zu erkennen sind (siehe die beiden "input" Anschlüsse seitlich der zentral angeordneten LED):



Somit zeigt auch die D23, dass es zum Prioritätstag des Streitpatents bereits bekannt war, Starthilfevorrichtungen mit einem USB-Ladeport zum Laden der internen Spannungsversorgung zu versehen, um die Kompatibilität mit USB-Ladegeräten zu gewährleisten.

Ferner wird auf die Druckschrift D24 sowie deren Maschinenübersetzung D24a verwiesen, in der ebenfalls eine Starthilfevorrichtung mit einem USB-Ladeport gezeigt ist. Nachfolgend wird auf die relevanten Textpassagen der Maschinenübersetzung D24a Bezug genommen. Die D24a zeigt eine Starthilfevorrichtung:

> *A multifunctional portable power supply device [...] so that the control circuit activates the battery to supply power to the car, in order to assist the rescue of starting the car's power supply.*

(siehe Zusammenfassung der D24a)

Bei der Starthilfevorrichtung gemäß der D24a ist es vorgesehen, dass die interne Spannungsversorgung (in der Fig. 3 mit dem Bezugszeichen 12 versehen) mit Hilfe eines Solarmoduls (Fig. 3: Bezugszeichen 15) aufgeladen werden kann, das über einen USB-Ladeport (Fig. 3: Bezugszeichen 13) mit der Starthilfevorrichtung (Fig. 3: Bezugszeichen 10) verbunden ist. In diesem Zusammenhang ist in der D24a Folgendes ausgeführt:

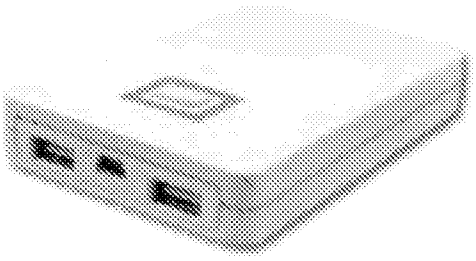
> One end of a USB transmission line can be connected to the USB socket and the other end is connected to a solar panel, so that the power generated by the solar panel can be controlled by the control circuit to charge the battery.
>
> (siehe Zusammenfassung der D24a)

Insofern war es auch aus der D24/D24a bereits zum Prioritätstag des Streitpatents bekannt, eine Starthilfevorrichtung mit einem USB-Ladeport zum Aufladen der internen Spannungsversorgung zu versehen. Ausgehend von der Druckschrift D10 würde der Fachmann zur Verbesserung der in der D10 beschriebenen Starthilfevorrichtung ein über einen USB-Ladeport verbindbares Solarmodul bereitstellen, um das Aufladen der internen Spannungsversorgung auch dann zu ermöglichen, wenn keine Steckdose verfügbar ist. Dabei würde er unmittelbar zu dem Gegenstand des Anspruchs 1 des Streitpatents gelangen. Somit ist der Gegenstand des Anspruchs 1 auch durch die Kombination der Druckschriften D10 und D24/D24a nahegelegt.

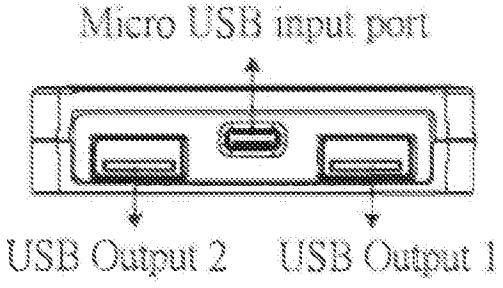
Weiterhin ist die Verwendung von USB-Ladeports zum Aufladen einer internen Spannungsversorgung elektrischer Vorrichtungen auch bereits aus der D25 bekannt. Die Druckschrift D25 beschreibt eine Powerbank der Firm TOPCOM TECHNOLOGY und damit eine Vorrichtung, die auf einem verwandten technischen

Gebiet liegt, wie die Starthilfevorrichtung. Sowohl Powerbanks als auch tragbare Starthilfevorrichtungen stellen Ladegeräte dar, die eingesetzt werden, um das mobile Aufladen entladener Batterien zu ermöglichen. Die Druckschrift D25 stammt aus dem Jahr 2011 und ist damit mehr als zwei Jahre vor dem Prioritätsjahr des Streitpatents veröffentlicht worden.

Auf der Titelseite der D25 ist eine perspektivische Ansicht der Powerbank abgebildet:



In dieser Abbildung ist zu erkennen, dass die Powerbank an ihrer Vorderseite drei Anschlüsse aufweist, wobei es sich bei den beiden äußeren Anschlüssen jeweils um USB Typ A Anschlüsse handelt und bei dem mittleren Anschluss um einen Mircro USB Anschluss. Auf der Seite 2 der D25 ist im Abschnitt "2. Product Specification" näher ausgeführt, dass es sich bei den USB Typ A Anschlüssen um Ausgangsanschlüsse handelt und bei dem Micro USB Anschluss um einen Eingangsanschluss:



Insofern zeigt also auch die D25 einen USB-Ladeport zum Aufladen der internen Spannungsversorgung, wie dies im Merkmal 1.8 des Anspruchs 1 des Streitpatents definiert ist. Ausgehend von der D10 würde sich der Fachmann zur Verbesserung der Lademöglichkeiten mit der D25 beschäftigen, die auf einem verwandten technischen Gebiet liegt, und dabei unmittelbar erkennen, dass die Verwendung eines Micro USB Ladeports den Vorteil bietet, dass dieser nur wenig Platz auf der Gehäuseseite einnimmt und zudem die Kompatibilität mit handelsüblichen USB-Ladegeräten gewährleistet. Der Fachmann würde daher ausgehend von der Druckschrift D10, den Micro USB Ladeport der D25 implementieren, ohne dabei erfinderisch tätig zu werden. Der Gegenstand des Anspruchs 1 des Streitpatents ist daher auch durch die Kombination der Druckschriften D10 und D25 vorweggenommen.

2. Mangelnde erfinderische Tätigkeit gegenüber der D1

Zudem ist die im Anspruch 1 des Streitpatents beanspruchte Erfindung auch durch die Druckschrift D1 nahegelegt. Die Druckschrift D1 beschreibt eine Starthilfevorrichtung mit zahlreichen Sensoren, die dazu eingesetzt werden, etwaige Fehler und Störungen bei der Verwendung der Starthilfevorrichtung zu detektieren. Insbesondere offenbart die D1 dabei Folgendes (die in eckigen Klammern angegebenen Referenzstellen beziehen sich auf die D1):

1 Vorrichtung zur Starthilfe eines Fahrzeugmotors [Sp. 1, Z. 17-18: "portable power source for a motor vehicle"], umfassend:

1.1 eine interne Spannungsversorgung [Fig. 1: "Jump Starter Batteries 22"], ~~die eine Lithiumionenbatterie umfasst~~;

1.2 einen positiv und negativ gepolte Ausgänge aufweisenden Ausgangsan-

schluss, der mit einer Kabelvorrichtung verbindbar ist [Fig. 2C: "RED CLAMP" und "BLACK CLAMP"],

1.3 einen Fahrzeugbatterie-Isolationssensor [Fig. 1: "Vehicle Voltage Sensor 30"], der mit den positiv und negativ gepolten Ausgängen in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie [Fig. 1: "Vehicle to be started 28"], die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, konfiguriert ist [Sp. 1, Z. 62 bis Sp. 2, Z. 3: "The present invention monitors the voltage of the battery of the vehicle to be jump started [...] The voltage is monitored to determine open circuit, disconnected conductive clamps [..]],

1.4 weiter ist der Fahrzeugbatterie-Isolationssensor [Fig. 1: "Vehicle Voltage Sensor 30"] mit einem Mikrokontroller [Fig. 1: "System Microcontroller 12"] verbunden,

1.5 einen Verpolungssensor [Fig. 1: "Reverse Voltage Sensor 24"], der in einer Schaltung mit den positiv und negativ gepolten Ausgängen [Fig. 4: "RED CLAMP" und "BLACK CLAMP"] verbunden ist, und zur Detektion der Polarität der Fahrzeugbatterie [Fig. 1: "Vehicle to be started 28"], die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, konfiguriert ist, wobei der Verpolungssensor zum Ausgeben eines Eingabesignals für den Mikrocontroller konfiguriert ist [Fig. 1: direkte Verbindung des "Reverse Voltage Sensor 24" und des "System Microcontroller 12"], das anzeigt, ob die Fahrzeugbatterie mit passender Polung angeschlossen ist [Fig. 1: "Reverse Voltage LED 48"];

1.6 einen Leistungs-~~FET~~-Schalter [Fig. 1: "Contact Relay 34"], der zwischen der internen Spannungsversorgung [Fig. 1: "Jump Starter Batteries 22"] und dem Ausgangsanschluss [Fig. 1: "line 37"] angeschlossen ist; und

1.7.1 wobei der programmierbare Mikrocontroller zum Empfangen eines Eingabesignals vom Fahrzeug-Isolationssensor und des Eingabesignals vom Verpolungssensor [Fig. 1: direkte Verbindung des "Vehicle Voltage Sensor 30" und des "Reverse Voltage Sensor 24" mit den Eingängen des "System Microcontroller 12"] und zum Bereitstellen eines Ausgabesignals an den Leistungs-~~FET~~-Schalter [Fig. 1: Ausgang 58 des Mikrocontrollers 12 und Schalter 34] so konfiguriert ist, dass der Leistungs-~~FET~~-Schalter [Fig. 1: "Contact Relay 34"] als Antwort auf die Eingabesignale des Isolationssensors und des Verpolungssensors, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden [Sp. 6, Z. 19-21: "Upon detection of any fault condition, the system will open the contact relay 34 (if closed) and display a message indicating that a fault has occurred...", Sp. 6, Z. 51-59: "If 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 jump starter cables has been disconnected 302 from the vehicle's battery or starter system 28 then [...] the contact relay 34 is opened and the fault LED 56 is illuminated 290.", Sp. 7, Z. 65-66: "...if the vehicle's battery is not connected...", Sp. 8, Z. 24: "...if no battery is present...", Sp. 1, Z. 59-63: "The apparatus and method performs real-time monitoring of all system parameters to increase the safety and effectiveness of the unit's operation while providing additional parametric and diagnostic information obtained before, during and after the vehicle starting operation.", Sp. 1, Z. 47-50: "If the jumper cables are not properly connected, there is a potential for the batteries exploding and fire, which may result in injury to those in proximity to the vehicle being jumped.", Sp. 4, Z. 40-44: "If the system

does not detect a battery charging voltage 212, once jumper cables 60 have been 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"], und

1.7.2 als Antwort auf die Eingabesignale der Sensoren nicht eingeschaltet wird, wenn die Eingabesignale der Sensoren anzeigen, dass die Fahrzeugbatterie entweder nicht mit der Starthilfevorrichtung verbunden ist oder die Fahrzeugbatterie verpolt mit der Starthilfevorrichtung verbunden ist [Fig. 1: "Contact Relay 34"] als Antwort auf die Eingabesignale des Isolationssensors und des Verpolungssensors, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden [Sp. 6, Z. 19-21: "Upon detection of any fault condition, the system will open the contact relay 34 (if closed) and display a message indicating that a fault has occurred...", Sp. 6, Z. 51-59: "If 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 jump starter cables has been disconnected 302 from the vehicle's battery or starter system 28 then [...] the contact relay 34 is opened and the fault LED 56 is illuminated 290.", Sp. 7, Z. 65-66: "...if the vehicle's battery is not connected...", Sp. 8, Z. 24: "...if no battery is present...", Sp. 1, Z. 59-63: "The apparatus and method performs real-time monitoring of all system parameters to increase the safety and effectiveness of the unit's operation while providing additional parametric and diagnostic information obtained before, during and after the vehicle starting operation.", Sp. 1, Z. 47-50: "If the jumper cables are not properly connected, there is a potential for the batteries exploding and fire, which may result in injury to those

in proximity to the vehicle being jumped.", Sp. 4, Z. 40-44: "If the system does not detect a battery charging voltage 212, once jumper cables 60 have been 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"],

~~1.8 wobei die Starthilfevorrichtung weiter umfasst: einen USB-Ladeanschluss (52) zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die interne Spannungsversorgung (32).~~

Die in der Druckschrift D1 beschriebene Starthilfevorrichtung unterscheidet sich von der im Anspruch 1 des Streitpatents definierten Starthilfevorrichtung lediglich darin, dass die folgenden Merkmale keine explizite Erwähnung finden:

- die interne Spannungsversorgung umfasst eine Lithiumionenbatterie,
- der Leistungs-Schalter ist als FET-Schalter ausgeführt und
- die Starthilfevorrichtung weist einen USB-Ladeanschluss auf.

Wie bereits vorstehend im Zusammenhang mit der mangelnden erfinderischen Tätigkeit des im Anspruch 1 definierten Gegenstandes ausgeführt, können die genannten Merkmale die Patentfähigkeit des Gegenstandes des Anspruchs 1 nicht begründen.

Zur Vermeidung unnötiger Wiederholungen wird hinsichtlich der Lithiumionenbatterie auf die obigen Ausführungen im Zusammenhang mit der D7, hinsichtlich des FET-Schalters auf die Ausführungen im Zusammenhang mit der D9 sowie der D12 und hinsichtlich des USB-Ladeanschlusses auf die obigen Ausführungen zum Naheliegen des Merkmals 1.8 des Anspruchs 1 sowie die Ausführungen im Zusammenhang mit den Druckschriften D3 sowie D20 bis D25 verwiesen.

Insofern ist der Gegenstand des Anspruchs 1 des Streitpatents auch durch die Druckschrift D1, allein oder in Kombination mit einer der Druckschriften D3 und D20 bis D25, nahegelegt.

3. Mangelnde erfinderische Tätigkeit gegenüber der D19

Die Druckschrift D19 beschreibt eine Starthilfevorrichtung mit einer Schutzschaltung (siehe Titel der D19). Diverse vorteilhafte Ausführungsformen der Schutzschaltung sind insbesondere in den Fign. 1, 3 und 5 dargestellt. Insbesondere zeigt die D19 Folgendes (die in eckigen Klammern angegebenen Referenzstellen beziehen sich auf die D19):

1 Vorrichtung zur Starthilfe eines Fahrzeugmotors [Absatz [0002]: "a booster device used for boosting a depleted battery"], umfassend:

1.1 eine interne Spannungsversorgung [Fig. 1: "boosting battery 2"], ~~die eine Lithiumionenbatterie umfasst~~;

1.2 einen positiv und negativ gepolte Ausgänge aufweisenden Ausgangsanschluss, der mit einer Kabelvorrichtung verbindbar ist [Fig. 1: Anschlüsse vor den Klemmen 8, 10],

1.3 einen Fahrzeugbatterie-Isolationssensor [Absatz [0048]: "Microprocessor 60 can be programmed to detect if clamps 8, 10 are connected to a battery or have been disconnected", Absatz [0055]: "The microprocessor 60 can also be programmed to detect a bad battery or a battery whose voltage is too low to be jump started" sowie Absatz [0056]: "This type of fault may also be detected if there is no battery connected to clamps 8, 10 or a poor connection is made to the depleted battery 11 and the jump starter is activated."], der mit den positiv und negativ gepolten Ausgängen in einer

Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, konfiguriert ist [Absatz [0048]: "Microprocessor 60 can be programmed to detect if clamps 8, 10 are connected to a battery or have been disconnected", Absatz [0055]: "The microprocessor 60 can also be programmed to detect a bad battery or a battery whose voltage is too low to be jump started" sowie Absatz [0056]: "This type of fault may also be detected if there is no battery connected to clamps 8, 10 or a poor connection is made to the depleted battery 11 and the jump starter is activated."],

1.4 weiter ist der Fahrzeugbatterie-Isolationssensor [Fig. 1: "polarity sensing circuit 16"] mit einem Mikrokontroller [Fig. 5: "microprocessor 60"] verbunden,

1.5 einen Verpolungssensor [Fig. 1: "polarity sensing circuit 16"], der in einer Schaltung mit den positiv und negativ gepolten Ausgängen verbunden ist, und zur Detektion der Polarität der Fahrzeugbatterie [Fig. 1: "depleted battery 11"], die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, konfiguriert ist, wobei der Verpolungssensor [Fig. 1: "polarity sensing circuit 16"] zum Ausgeben eines Eingabesignals für den Mikrocontroller konfiguriert ist [Fig. 5: direkte Verbindung des "polarity sensing circuit 16" und des "microprocessor 60"], das anzeigt, ob die Fahrzeugbatterie mit passender Polung angeschlossen ist [Absatz [0047], zweiter Satz: "The display 64 may be controlled by the microprocessor 60 to display a message indicating reverse polarity."];

1.6 einen Leistungs-FET-Schalter [Fig. 1: "switch 12"], der zwischen der internen Spannungsversorgung [Fig. 1: "boosting battery 2"] und dem Ausgangsanschluss [Fig. 1: Anschlüsse vor den Klemmen 8, 10] ange-

schlossen ist; und

1.7.1 wobei der programmierbare Mikrocontroller zum Empfangen eines Eingabesignals vom Fahrzeug-Isolationssensor und des Eingabesignals vom Verpolungssensor [Fig. 5: direkte Verbindung des "polarity sensing circuit 16" am Eingang 5 des Mikrocontrollers 60] und zum Bereitstellen eines Ausgabesignals an den Leistungs-FET-Schalter [Fig. 5: Ausgang 8 des Mikrocontrollers 60] so konfiguriert ist, dass der Leistungs-FET-Schalter [Fig. 1 und 5: "switch 12"] als Antwort auf die Eingabesignale des Isolationssensors und des Verpolungssensors, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden [Absatz [0034]: "When an improper polarity connection is made between the boosting battery 2 and the depleted battery 11, as shown in FIG. 2, the LED 26 in the opto-isolator 16 and diode 32 are reversed biased. Diode 32 prevents current flow from the depleted battery 11 in a reverse direction. Thus, there is essentially no current flow through the LED 26, diode 32 and resistor 30. Consequently, the phototransistor 22 in the opto-isolator 16 is in a non-conducting state. In turn, the FETs 12a-12d of the switch are in a non-conducting state, and there is essentially no current flow from the boosting battery 2 to the depleted battery 11, preventing a potentially dangerous situation.", Absatz [0035]: "When the clamps are disconnected, diode 26 is no longer forward biased and no current flows therethrough, turning the phototransistor 22 in the opto-isolator off, which in turn, turns the FETs 12a-12d off. The boosting circuit is then, in effect, reset, preventing short-circuits or a reverse polarity connection being made after a proper polarity connection is made. In a further embodiment, described below in conjunction with FIG. 3, the battery booster device can be provided with

a disable switch that interrupts the boosting circuit to ensure the safe disconnection of the clamps from the depleted battery 11 or a microprocessor or other circuitry can be programmed to detect when the depleted battery is disconnected.", Absatz [0048]: "Via the feedback circuit or other means, the microprocessor detects whether clamps 8,10 are connected to a battery. If no battery is present, the switch 12 is placed in a non-conducting state, that is, all the FETs 12a-12d are placed in a non-conducting state.", Absatz [0055]: "The microprocessor 60 can also be programmed to detect a bad battery or a battery whose voltage is too low to be jump started" sowie Absatz [0056]: "This type of fault may also be detected if there is no battery connected to clamps 8, 10 or a poor connection is made to the depleted battery 11 and the jump starter is activated."], und

1.7.2 als Antwort auf die Eingabesignale der Sensoren nicht eingeschaltet wird, wenn die Eingabesignale der Sensoren anzeigen, dass die Fahrzeugbatterie entweder nicht mit der Starthilfevorrichtung verbunden ist oder die Fahrzeugbatterie verpolt mit der Starthilfevorrichtung verbunden ist [Fig. 5: direkte Verbindung des "polarity sensing circuit 16" und des Mikrocontrollers 60] und zum Bereitstellen eines Ausgabesignals an den Leistungs-FET-Schalter [Fig. 5: Ausgang 8 des Mikrocontrollers 60] so konfiguriert ist, dass der Leistungs-FET-Schalter [Fig. 1 und 5: "switch 12"] als Antwort auf die Eingabesignale des Isolationssensors und des Verpolungssensors, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden [Absatz [0034]: "When an improper polarity connection is made between the boosting battery 2 and the depleted battery 11, as shown in FIG. 2, the LED 26 in the opto-isolator 16 and diode 32 are reversed biased. Diode 32 prevents current flow from the depleted

battery 11 in a reverse direction. Thus, there is essentially no current flow through the LED 26, diode 32 and resistor 30. Consequently, the photo-transistor 22 in the opto-isolator 16 is in a non-conducting state. In turn, the FETs 12a-12d of the switch are in a non-conducting state, and there is essentially no current flow from the boosting battery 2 to the depleted battery 11, preventing a potentially dangerous situation.", Absatz [0035]: "When the clamps are disconnected, diode 26 is no longer forward biased and no current flows therethrough, turning the phototransistor 22 in the opto-isolator off, which in turn, turns the FETs 12a-12d off. The boosting circuit is then, in effect, reset, preventing short-circuits or a reverse polarity connection being made after a proper polarity connection is made. In a further embodiment, described below in conjunction with FIG. 3, the battery booster device can be provided with a disable switch that interrupts the boosting circuit to ensure the safe disconnection of the clamps from the depleted battery 11 or a microprocessor or other circuitry can be programmed to detect when the depleted battery is disconnected.", Absatz [0048]: "Via the feedback circuit or other means, the microprocessor detects whether clamps 8,10 are connected to a battery. If no battery is present, the switch 12 is placed in a non-conducting state, that is, all the FETs 12a-12d are placed in a non-conducting state.", Absatz [0055]: "The microprocessor 60 can also be programmed to detect a bad battery or a battery whose voltage is too low to be jump started" sowie Absatz [0056]: "This type of fault may also be detected if there is no battery connected to clamps 8, 10 or a poor connection is made to the depleted battery 11 and the jump starter is activated."],

~~1.8 wobei die Starthilfevorrichtung weiter umfasst: einen USB-Ladeanschluss (52) zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die interne Spannungsversorgung (32).~~

Die in der Druckschrift D19 beschriebene Starthilfevorrichtung unterscheidet sich von der im Streitpatent beanspruchten Erfindung darin, dass sie die nachfolgenden Merkmale nicht explizit erwähnt:

- die interne Spannungsversorgung umfasst eine Lithiumionenbatterie und
- die Starthilfevorrichtung weist einen USB-Ladeanschluss auf.

Wie vorstehend bereits erläutert, können die Merkmale betreffend die Lithiumionenbatterie und den USB-Ladeanschluss die Patentfähigkeit des im Anspruch 1 des Streitpatents definierten Gegenstandes nicht begründen, da diese Merkmale bereits aus den Druckschriften D7 (Lithiumionenbatterie) sowie den Druckschriften D3 und D20 bis D25 bekannt oder zumindest durch die genannten Druckschriften nahegelegt sind. Zur Vermeidung unnötiger Wiederholungen wird auf die obigen Ausführungen im Zusammenhang mit den Merkmalen Lithiumionenbatterie und USB-Ladeanschluss verwiesen.

Insofern ist der Gegenstand des Anspruchs 1 des Streitpatents auch durch die Druckschrift D19, allein oder in Kombination mit einer der Druckschriften D3 und D20 bis D25, nagegelegt.

IV. Mangelnde Patentfähigkeit der abhängigen Ansprüche § 21 PatG i. V. m. § 4 PatG

Auch die in den abhängigen Ansprüchen 2 bis 21 definierten Gegenstände können nicht dazu beitragen, eine Patentfähigkeit der beanspruchten Lehre zu begründen, da die abhängigen Ansprüche lediglich Details beschreiben, die bereits aus dem Stand der Technik bekannt sind.

Anspruch 2

Nach Anspruch 2 ist definiert, dass die Lithiumionenbatterie eine Batterieeinheit aus mehreren Lithiumionenbatterien umfasst.

Die Verwendung mehrerer Lithiumionenbatterien als eine Batterieeinheit ist jedoch bereits aus dem Stand der Technik bekannt. In diesem Zusammenhang wird insbesondere auf die Druckschrift D7 verwiesen (siehe Fig. 1 sowie Sp. 3, Z. 32-35: "It should be noted that the battery 16 may include a variety of energy sources including lead acid batteries, nickel cadmium batteries, lithium batteries, fuel cells, or others.").

Anspruch 3

Gemäß Anspruch 3 umfasst der Leistungs-FET-Schalter (15) eine Vielzahl von Leistungs-FETs in Parallelschaltung (16).

Die Verwendung mehrerer Leistungs-FETs in einer Parallelschaltung ist bereits aus den Druckschriften D2 (siehe Fig. 2 sowie Absatz [0017]: "However, referring to Figure 2, it is also possible to implement the semiconductor switching unit 41 with a plurality of two or more transistors 411, having their load paths connected in parallel.") und D19 (siehe Fig. 1: FETs 12a bis 12d sowie Absatz [0030]: "FIG. 1 represents the switch 12 as a number FETs 12a-12d connected in parallel with each other.") bekannt und kann die Patentfähigkeit der beanspruchten Erfindung nicht begründen.

Anspruch 4

Anspruch 4 verlangt, dass der Fahrzeug-Isolationssensor (12) und der Verpolungssensor (10) optisch gekoppelte Isolationsphototransistoren umfassen.

Der Einsatz von Isolationsphototransistoren in Isolationssensoren und Verpo-

lungssensoren ist bereits aus dem Stand der Technik bekannt, insbesondere aus den Druckschriften D10 (siehe Fig. 4: optic coupler OC1 sowie Fig. 5: optic coupler OC1-OC4), D4 (siehe Fign. 4 und 5: photocoupler 15) und D19 (siehe Fig. 1: phototransistor 22).

Anspruch 5

Die Starthilfevorrichtung nach Anspruch 5 umfasst ferner eine Vielzahl von Spannungsdioden (28), die zwischen dem Ausgangsanschluss (303) und der internen Spannungsversorgung (32) gekoppelt sind, um eine Rückaufladung der internen Spannungsversorgung (32) durch ein an den Ausgangsanschluss (303) angeschlossenes elektrisches System zu verhindern.

Auch wenn im Anspruch 5 in der erteilten Fassung von einer "Vielzahl von Spannungsdioden" die Rede ist, wird unter diesem Ausdruck eher eine "Mehrzahl von Leistungsdioden" zu verstehen sein (siehe englische Fassung des ursprünglichen Anspruchs 6 im Original: "a plurality of power diodes"). Die Verwendung von Dioden zur Verhinderung einer Rückaufladung der internen Spannungsversorgung ist bereits aus der D11 bekannt (siehe Fign. 1 und 2: half wave rectifyer 36 sowie Spalte 4, Z. 57-59: "The cable 14 includes an electrical current restrictor in form of a half wave rectifier for preventing reverse current flow while a user attempts to restart a stranded vehicle.").

Anspruch 6

Zusätzlich ist im Anspruch 6 definiert, dass die Starthilfevorrichtung einen Temperatursensor (20) zur Detektion der Temperatur der internen Spannungsversorgung (32) und zum Bereitstellen eines Temperatursignals an den Mikrocontroller (1) umfasst.

Ein solcher Temperatursensor ist jedoch bereits aus den Druckschriften D3 (siehe Fig. 1 sowie Absatz [0024]: "Wenn die Hochtemperatur-Schutzeinheit 81 erkennt, dass die aktuelle Temperatur des wiederaufladbaren Lithium-Ionen-Akkus 20 über 50 Grad beträgt, wird der Mikrocontroller 10 benachrichtigt, dann wird der Mikrocontroller 10 das Relais 50 abschalten und die Zündungs- und Startfunktion wird verboten.") und D1 (siehe Fig. 1: "Battery Temperature Sensor 38") bekannt.

Anspruch 7

Im Anspruch 7 ist definiert, dass zusätzlich eine Spannungsmessungsschaltung (24) vorgesehen ist, die zur Messung der Ausgabespannung der internen Spannungsversorgung (32) und zum Bereitstellen eines Spannungsmessungssignals an den Mikrocontroller (1) konfiguriert ist.

Derartige Spannungsmessschaltungen sind insbesondere aus der Druckschrift D3 bekannt (siehe Fig. 1 sowie [0025]: "Wenn die Überladeschutzeinheit 83 erkennt, dass die Spannung des wiederaufladbaren Lithium-Ionen-Akkus 20 über 12,6V beträgt, schaltet der Mikrocontroller 10 die Verbindung zwischen der äußeren Ladestromquelle und dem wiederaufladbaren Lithium-Ionen-Akku 20 ab.") und können daher eine Patentfähigkeit nicht begründen.

Anspruch 8

Nach Anspruch 8 umfasst die Starthilfevorrichtung einen Spannungsregler (42), der zur Umwandlung der Ausgabespannung der internen Spannungsversorgung (32) in einen Spannungspegel konfiguriert ist, der geeignet ist, um internen Komponenten der Vorrichtung eine Betriebsspannung bereitzustellen.

Spannungsregler zur Umwandlung der Ausgabespannung sind bereits aus der

D20 bekannt (siehe Fig. 3 sowie Absatz [0013]: "A power inverter 60 may be disposed in the housing 10. The power inverter may be adapted to convert AC power to DC power, DC power to AC power, or to step up or step down the voltage level of AC or DC power").

Anspruch 9

Gemäß Anspruch 9 ist zusätzlich ein USB-Ausgangsanschluss (56) vorgesehen, der zum Bereitstellen einer Ladungsspannung der internen Spannungsversorgung (32) an eine USB-ladbare Vorrichtung konfiguriert ist.

Starthilfevorrichtungen mit USB-Ausgangsanschlüssen sind aus dem Stand der Technik weitläufig bekannt (siehe D3, Fig. 2 und Absatz [0016]: "USB3.0-Ausgang, Ausgabe von 5V/2A" sowie Absatz [0018]: "Das bietet der Not-Startstromversorgung für Fahrzeuge 1 die Funktion der USB-Aufladung an, dadurch können digitale Produkte wie Handy und IPAD usw. aufgeladen werden."; D19, Anspruch 6: "further comprising a USB port configured to output DC power"; D22, Modelle Epower-Standard / Epower-3 / Epower-05 / Epower-10 / Epower-20 / Epower-20B / Epower-21: "Output 5V/2A").

Anspruch 10

Ferner verlangt Anspruch 10 eine Blitzlicht-Schaltung (36, 45), die zum Bereitstellen einer Lichtquelle für einen Nutzer konfiguriert ist.

Die Lichtquellen der aus dem Stand der Technik bekannten Starthilfevorrichtungen sind bereits mit verschiedenen Lichtfunktionen ausgestattet (siehe beispielsweise D22, Modelle Epower-10 / Epower-20 / Epower-21: "LED light (light, burst flashing, SOS)"), wodurch auch das zusätzliche Merkmal des Anspruchs 10 die Patentfähigkeit der beanspruchten Erfindung nicht begründen kann.

Ferner offenbart die Druckschrift D27 eine Starthilfevorrichtung mit einer Lichtquelle (siehe beispielsweise D27, Absatz [0041]: "[...], which provides sufficient power to start a wide variety of vehicles" und Absatz [0048]: "The exemplary emergency appliance 10 seen in FIG. 1 and FIG. 2 also preferably comprises integrated lights 42, such as to illuminate a work area for a user USR.").

Anspruch 10 beruht somit auch im Hinblick auf eine Kombination eine der Druckschriften D10, D1 oder D19 mit der D27 nicht auf einem erfinderischen Schritt.

Anspruch 11

Die im Anspruch 10 definierte Lichtquelle ist in Anspruch 11 als LED-Lichtquelle konkretisiert.

Starthilfevorrichtungen mit LED-Lichtquellen sind aus dem Stand der Technik weitläufig bekannt (siehe beispielsweise D22, Modelle Epower-10 / Epower-20 / Epower-21: "LED light (light, burst flashing, SOS)" sowie D21, Modelle Epower-02 / Epower-03: "LED light (light, burst flash & SOS)").

Ferner offenbart auch die Druckschrift D27 in Absatz [0048] eine LED-Lichtquelle ("[...], the lights 42 comprise halogen or LED lights 42"). Anspruch 11 beruht somit auch im Hinblick auf eine Kombination eine der Druckschriften D10, D1 oder D19 mit der D27 nicht auf einem erfinderischen Schritt.

Anspruch 12

Nach Anspruch 12 ist der Mikrocontroller (1) zur Kontrolle der zuvor definierten

LED konfiguriert, um einen visuellen Alarm zur Anzeige einer Notsituation bereitzustellen.

In den Dokumenten D22 und D21 ist beschrieben, dass die LED dazu konfiguriert sein kann, einen visuellen Alarm zur Anzeige einer Notsituation bereitzustellen (D22, Modelle Epower-10 / Epower-20 / Epower-21: LED-Lichtquelle zur Anzeige eines SOS-Alarms und D21, Modelle Epower-02 / Epower-03: LED-Lichtquelle zur Anzeige eines SOS-Alarms)). Für den Fachmann ist es ersichtlich, dass eine entsprechende Steuereinheit erforderlich ist, um die LED zur Anzeige des visuellen Alarms anzusteuern. Da Mikrocontroller bekanntermaßen eine flexible Ansteuerung elektronischer Komponenten erlauben, ist es für den Fachmann naheliegend, einen derartigen Mikrocontroller für die Ansteuerung der LED zu verwenden. Insofern ist das Merkmal des Anspruchs 12 ebenfalls durch den Stand der Technik nahegelegt.

Darüber hinaus zeigt auch die Druckschrift D3 den Gegenstand des Anspruchs 12 nahe (siehe Fign. 1 und 2: Mikrocontroller (MCU) 10 und Anzeigeeinheit für Hilfssignale 93 sowie Absatz [0015]: "S.O.S.-Hilfe" und Absatz [0035]: "Wenn im Einschaltungszustand die LIGHT/S.O.S.-Taste einmal gedrückt wird, leuchtet S.O.S.-Rote-Lampe (Anzeigeeinheit für Hilfesignale 93")".

Zudem offenbart die D27 in Absatz [0056] eine visuelle Alarmanzeige ("[...] The appliance 10 shown in Fig. 5 and FIG. 6 also comprises safety illumination 82, which may provide a flashing mode, such as to alert passing motorists. [...]").

Somit ist das zusätzliche Merkmal des Anspruchs 12 ebenfalls durch den Stand der Technik nahegelegt.

Anspruch 13

Gemäß Anspruch 13 ist ferner eine Vielzahl von visuellen Anzeigen (61) vorgesehen, die zur Anzeige des verbleibenden Kapazitätszustands der internen Spannungsversorgung (32) konfiguriert sind.

Derartige visuelle Anzeigen sind aus dem Stand der Technik weitläufig bekannt (siehe D3, Absatz [0037]: "Die Anzeigeeinheit für Elektrizitätsmenge 94 des wiederaufladbaren Lithium-Ionen-Akkus 20 dient zur Anzeige der aktuellen Elektrizitätsmenge des wiederaufladbaren Lithium-Ionen-Akkus 20 und hat eine Form von streifenförmiger Anzeigelampe, von links nach rechts gibt es die Anzeigelampen für Akku-Elektrizitätsmenge in roter, oranger, gelber und grüner Farbe." sowie D20, Anspruch 17: "further comprising a set of indicator lights configured to indicate the status of the internal battery") und können die Patentfähigkeit der beanspruchten Erfindung ebenfalls nicht begründen.

Anspruch 14

Die Vielzahl der zuvor in Anspruch 13 eingeführten visuellen Anzeigen (61) umfassen nach Anspruch 14 eine Vielzahl von LEDs, die Licht verschiedener Farben ausgeben.

Hinsichtlich der LEDs mit verschiedenen Farben wird ebenfalls auf die Druckschrift D3 verwiesen (siehe Absatz [0037]: "Die Anzeigeeinheit für Elektrizitätsmenge 94 des wiederaufladbaren Lithium-Ionen-Akkus 20 dient zur Anzeige der aktuellen Elektrizitätsmenge des wiederaufladbaren Lithium-Ionen-Akkus 20 und hat eine Form von streifenförmiger Anzeigelampe, von links nach rechts gibt es die Anzeigelampen für Akku-Elektrizitätsmenge in roter, oranger, gelber und grüner Farbe."). Zudem sind auch in der Druckschrift D6 LEDs mit verschiedenen Farben zur Anzeige der verbleibenden Ladezustandes beschrieben (siehe Absatz [0016]: "Der Ladezustand des Batteriesatzes 70 wird von der Anzeigeeinheit 60 angezeigt und weist folgende Angaben auf: (1) wenn der Mikroprozessor 30 die Stromzu-

fuhr empfangen hat und normal arbeitet, ist die grüne LED eingeschaltet; (2) wenn der Batteriesatz 70 sich nicht zum Aufladen eignet oder wenn die Ausgangsspannung des Batteriesatzes 70 geringer ist als die erste Ladeschwellenspannung, also beispielsweise 0,8 V, dann blinkt die rote LED").

Anspruch 15

In Anspruch 15 ist zudem eine visuelle Anzeige (63) vorgesehen, die zur Warnung eines Benutzers konfiguriert ist, wenn eine Batterie verpolt angeschlossen ist.

Eine solche Anzeige ist ebenfalls bereits aus dem Stand der Technik vorbekannt (siehe beispielsweise die Druckschrift D1, Fig. 1: "Reverse Voltage LED 48").

Anspruch 16

Die im Anspruch 16 definierte Starthilfevorrichtung weist getrennte visuelle Anzeigen (62) auf, die zur Anzeige des Spannung-EIN-Status der Vorrichtung und zur Anzeige des Status der Starthilfespannung, der dem Ausgangsanschluss (303) bereitgestellten Spannung konfiguriert ist.

Die zusätzlichen Merkmale des Anspruchs 16 betreffen lediglich die Anzeige von Informationen und lassen keinen technischen Charakter erkennen.

Darüber hinaus ist bereits aus der Druckschrift D1 eine Starthilfevorrichtung bekannt, die getrennte visuelle Anzeigen aufweist, welche zur Anzeige diverser Zustände vorgesehen sind (siehe Fig. 1: LCD display 46, Reverse Voltage LED 48, Auto Mode LED 50, Manual Mode LED 52, Charge Battery LED 54, Fault LED 56). Ausgehend von den genannten Anzeigen der Starthilfevorrichtung gemäß der Druckschrift D1 ist auch das Merkmal des Anspruchs 16 nahegelegt.

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Anspruch 17

Nach Anspruch 17 ist zusätzlich ein manueller Starthilfeschalter verlangt, der zum Aktivieren eines manuellen Starthilfemodus konfiguriert ist, der es einem Benutzer ermöglicht, die Starthilfespannung mit dem Ausgangsanschluss (303) zu verbinden, wenn der Fahrzeugbatterie-Isolationssensor (12) das Vorhandensein einer Fahrzeugbatterie nicht detektieren kann.

Ein solcher manueller Starthilfemodus ist bereits aus der Druckschrift D1 bekannt (siehe Fig. 1: Manual Mode Push Button 44 sowie Spalte 7, Zeilen 64-66: "If in manual mode, the jump starter 10 may be used when the battery voltage of the vehicle is below 10 volts, or if the vehicle's battery is not connected.") und kann die Patentfähigkeit der beanspruchten Erfindung ebenfalls nicht begründen.

Anspruch 18

Gemäß Anspruch 18 ist der Mikrocontroller (1) zur Detektion der manuellen Starthilfeschaltung für mindestens eine vorbestimmte Zeitdauer vor dem Aktivieren des manuellen Starthilfemodus konfiguriert.

Anspruch 18 lässt nicht erkennen, welchen technischen Beitrag eine Detektion der manuellen Starthilfeschaltung zu der beanspruchten Erfindung leisten soll. Eine manuelle Starthilfeschaltung ist jedenfalls aus der Druckschrift D1 bekannt (siehe Fig. 1: Manual Mode Push Button 44), wobei eine Detektion der Schaltung weder erforderlich noch in irgendeiner Weise vorteilhaft erscheint.

Darüber hinaus ist auch aus der Druckschrift D1 bekannt, einzelne Prozesse nach Ablauf einer vorbestimmten Zeitdauer zu initiieren (siehe Anspruch 10: "wherein said applying step includes closing a relay, starting a timer set for predetermined

period of time, and opening said relay upon expiration of said timer." sowie Spalte 7, Zeilen 48-50: "and the system waits for five minutes for the system to cool 340. Once the cool down time has expired, processing returns to the main processing loop 210.").

Insofern kann das zusätzliche Merkmal des Anspruchs 18 die Patentfähigkeit der beanspruchten Erfindung ebenfalls nicht begründen.

Anspruch 19

Die in Anspruch 19 definierte Starthilfevorrichtung umfasst zusätzlich eine Starthilfekabelvorrichtung (400), die einen Stecker (401) umfasst, zum Einstecken in den Ausgangsanschluss, ein Kabelpaar (402a, 402b), an dessen jeweiligem einen Ende der Stecker (401) integriert ist und zum Anschließen an die Anschlüsse einer Batterie an dessen jeweiligem anderen Ende konfiguriert sind.

Derartige Starthilfekabelvorrichtungen sind insbesondere aus der Druckschrift D7 bereits bekannt (siehe Fign. 6B und 6D: cable 60a und cable 60b).

Anspruch 20

Das in Anspruch 19 definierte Starthilfekabel weist nach Anspruch 20 ein Paar von Ringanschlüssen (404a, 404b) auf, die zum jeweiligen Verbinden des Kabelpaars (402a, 402b) an dessen anderem Ende mit einem Ende eines Batterieanschlusses oder einer Batterieanschlussklemme konfiguriert sind.

Auch die im Anspruch 19 definierten Ringanschlüsse stellen keinen Gegenstand dar, der gegenüber dem Stand der Technik neu wäre. Derartige Ringanschlüsse sind beispielsweise in der Druckschrift D8 gezeigt (siehe Fign. 2a und 2b: ring

terminals 23, 33).

Anspruch 21

Schließlich sind nach Anspruch 21 der Ausgangsanschluss (303) und der Stecker (401) so dimensioniert, dass der Stecker (401) nur in einer bestimmten Orientierung in den Ausgangsanschluss (303) passt.

Auch derartige Steckerkonstruktionen sind aus dem Stand der Technik bereits weitläufig bekannt. In diesem Zusammenhang wird beispielhaft auf die Druckschrift D8 verwiesen (siehe Fign. 2a-2c: der in diesen Figuren gezeigte Stecker 21 ist ebenfalls nur ein einer bestimmten Orientierung mit den Anschlüssen des Steckers 31 verbindbar). Insofern ist der Gegenstand des Anspruchs 21 ebenfalls durch den Stand der Technik nahegelegt.

V. Zusammenfassung

Aufgrund der obigen Ausführungen ist der Widerruf des Streitpatents im vollen Umfang begründet, da der einzige unabhängige Anspruch des Streitpatents nicht patentfähig ist und darüber hinaus die abhängigen Ansprüche keine zusätzlichen Merkmale enthalten, die die Patentfähigkeit der beanspruchten Erfindung begründen können.

Das Streitpatent ist daher vollständig zu widerrufen.

Dr. Alexander Schuld
Patentanwalt

Anlagen:

A1 Streitpatent
A2 Prioritätsanmeldung
A3 Merkmalsgliederung des Anspruchs 1
A4 Ladung zur mündlichen Anhörung, datiert vom 26. November 2019
A5 Schreiben der Patentinhaberin vom 17. April 2020
D1 US 8 493 021 B2
D2 EP 2 472 698 A2
D3 DE 20 2013 102 599 U1
D4 US 4 910 628 A
D5 DE 295 07 501 U1
D6 DE 20 2009 016 260 U1
D7 US 7 148 580 B2
D8 US 8 172 603 B1
D9 US 6 822 425 B2
D10 US 6 212 054 B1
D11 US 5 820 407 A
D12 US 6 632 103 B1
D13 US 5 189 359 A
D14 US 5 795 182 A
D15 US 6 262 492 B1
D16 US 5 635 817 A
D17 US 8 199 024 B2
D18 US 5 793 185 A
D19 US 2004/0130298 A1
D20 US 2007/0285049 A1
D21 Werbekatalog der Einsprechenden, übermittelt an die Patentinhaberin am 22. Dezember 2013
D22 Werbekatalog der Einsprechenden, übermittelt an eine Kundin am 23. April

2014

D23 SGS Testbericht betreffend mehrere Starthilfevorrichtungen der Einsprechenden, datiert vom 21. April 2014

D24 TW M417714 U1

D24a Maschinenübersetzung der D24

D25 Datenblatt der TOPCOM TECHNOLOGY CO., LTD. zu dem Produkt "Universal Power Bank", datiert vom 15. November 2011

D26 US 2013/0154543 A1

D27 US 2008/0150473 A1

D28 Werbekatalog der Einsprechenden, übermittelt an eine Kundin im Oktober 2013

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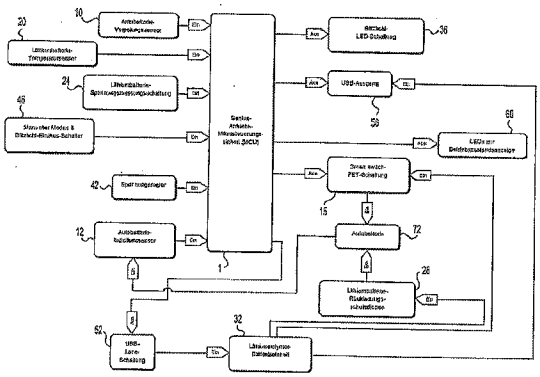
(73) Name und Wohnsitz des Inhabers:
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(74) Name und Wohnsitz des Vertreters:
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Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen.

(54) Bezeichnung: **Tragbare Starthilfevorrichtung für Fahrzeugbatterien mit Sicherheitsschutzvorrichtung**

(57) Hauptanspruch: Vorrichtung zur Starthilfe eines Fahrzeugmotors, umfassend:
eine interne Spannungsversorgung (32);
einen Ausgangsanschluss (303) mit positiv und negativ gepolten Ausgängen (CB-, CB+);
einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Ausgängen (CB-, CB+) in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;
einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Ausgängen (CB-, CB+) verbunden ist, und zur Detektion der Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;
und zur Bereitstellung eines Ausgangssignals konfiguriert ist, das anzeigt ob die positiven und negativen Anschlüsse der Fahrzeugbatterie (72), richtig an die positiv und negativ gepolten Ausgänge des Ausgangsanschluss (303) angeschlossen sind,
einen Spannungs-Schalter (15), der zwischen der internen Spannungsversorgung (32) und dem Ausgangsanschluss (305) angeschlossen ist; und
einen Mikrocontroller (1), der zum Empfangen von Eingabesignalen vom Fahrzeugbatterie-Isolationssensor (12) und vom Verpolungssensor (10) und zum Bereitstellen eines Ausgabesignals an den Spannungs-Schalter (15) konfiguriert ist, so dass der Spannungs-Schalter (15) als Antwort auf Signale der Sensoren, die das Vorhandensein ...



Beschreibung

Hintergrund der Erfindung

[0001] Die vorliegende Erfindung bezieht sich im Allgemeinen auf eine Starthilfevorrichtung für ein Fahrzeug, das eine verbrauchte oder entladene Batterie aufweist. Gemäß dem Stand der Technik sind Vorrichtungen bekannt, die entweder ein Paar von elektrischen Verbindungskabeln aufweisen, die eine vollständig aufgeladene Batterie eines anderen Fahrzeugs mit der Fahrzeugstartschaltung des Fahrzeugs verbinden, das die erschöpfte Batterie enthält, oder tragbare Starthilfevorrichtungen, die eine vollständig geladene Batterie aufweisen , und die mit der Startvorrichtung des Fahrzeugmotors über ein Kabelpaar in einer Schaltung verbunden werden können.

[0002] Probleme entstanden beim Stand der Technik, wenn entweder die Drahtbrückenanschlüsse oder - klemmen der Kabel irrtümlich miteinander in Kontakt gebracht wurden, während die anderen Enden an eine geladenen Batterie angeschlossen waren, oder wenn die positiven und negativen Anschlüsse mit den Anschlüssen entgegengesetzter Polung im zu überbrückenden Fahrzeug verbunden wurden, wodurch ein Kurzschluss verursacht wurde, der zu einer Funkenbildung und einer potentiellen Beschädigung der Batterien und/oder einem körperlichen Schaden führte.

[0003] Gemäß dem Stand der Technik wurden unterschiedliche Versuche zur Beseitigung dieser Probleme unternommen. US 6,212,054, erteilt am 3. April 2001, offenbart eine Batteriestarthilfeeinheit, die empfindlich auf die Polung reagiert und passende oder unpassende Verbindungen detektieren kann, bevor ein Pfad für den elektrischen Ladungsfluss bereitgestellt wird. Die Vorrichtung verwendet einen Satz von LEDs, die mit durch eine Steuerschaltung ausgerichteten optischen Kopplern verbunden sind. Die Steuerschaltung steuert eine Spulenanordnung, die den Pfad eines Leistungsstroms steuert. Der Steuerschaltkreis lässt einen Leistungsstromfluss durch die Spulenanordnung nur dann zu, wenn die Kontaktpunkte der Starthilfekabelklemmenverbindungen richtig angelegt wurden.

[0004] US 6,632,103, erteilt am 14. Oktober 2003, offenbart ein adaptives Starthilfekabel, das durch zwei Klemmenpaare verbunden ist, wobei die beiden Klemmenpaare jeweils an zwei Batterien angeschlossen sind, um Strom von einer Batterie zu einer anderen Batterie zu übertragen. Das adaptive Starthilfekabel enthält eine mit jeder Klemme verbundene Polungsdetektionseinheit, eine Schalteinheit und eine Stromdetektionseinheit, die beide zwischen den beiden Klemmenpaaren vorhanden sind. Nachdem die Polung jeder Klemme durch die Polungsdetektionseinheit abgetastet wurde, erzeugt die Schalteinheit eine geeignete Verbindung zwischen den beiden Batterien. Daher sind die positiven und negativen Anschlüsse der beiden Batterien basierend auf dem detektierten Ergebnis der Polungsdetektionseinheit passend verbunden.

[0005] US 8,493,021, erteilt am 23. Juli 2013, offenbart eine Vorrichtung, die die Spannung einer Fahrzeugbatterie, welche Starthilfe bekommt und den durch die Starthilfebatterien gelieferte Strom überwacht, um zu bestimmen, ob eine passende Verbindung hergestellt wurde und um eine Fehlerüberwachung bereitzustellen. Nur wenn die geeignete Polung detektiert wird, kann das System betrieben werden. Die Spannung wird überwacht, um einen offenen Stromkreis, getrennte leitende Klemmen, Nebenschlusskabelfehler und Spulenfehlerzustände zu erfassen. Der Strom durch das Nebenschlusskabel wird überwacht, um das Bestehen eines Batterieexplosionsrisikos und eines einen Überhitzungszustand darstellenden Überschussstromzustands zu erkennen, der zu einem Feuer führen kann. Das System enthält eine interne Batterie zum Bereitstellen der Spannung für die Batterie des Fahrzeugs, das Starthilfe bekommen soll. Sobald das Fahrzeug gestartet ist, findet eine automatische elektrische Trennung der Einheit von der Fahrzeugbatterie statt.

[0006] US 5,189,359, erteilt am 23. Februar 1993, offenbart eine Starthilfekabelvorrichtung, die zwei Brückengleichrichter zum Ausbilden einer Referenzspannung, einen Dekodierer mit vier Eingängen zum Erkennen, welche Anschlüsse verbunden werden sollen, basierend auf einem Vergleich der Spannung an jedem der vier Anschlüsse mit der Referenzspannung, und ein Relaispaar aufweist, zum Bewirken der passenden Verbindung in Abhängigkeit von der Erkennung durch den Dekodierer. Es wird keine Verbindung hergestellt, es sei denn, dass nur ein Anschluss einer jeden Batterie eine höhere Spannung als die Referenzspannung aufweist, so dass „positive" Anschlüsse angezeigt werden, und ein Anschluss eine geringere Spannung als die Referenzspannung aufweist, so dass „negative" Anschlüsse angezeigt werden, und dass deshalb die beiden Hochspannungsanschlüsse und die beiden Niedrigspannungsanschlüsse verbunden werden können. Der Strom fließt, sobald die entsprechende Relaisvorrichtung geschlossen wird. Die Relaisvorrichtung ist vorzugsweise eine Metall-Oxid-Halbleiter-Feldeffekttransistor (MOSFET), der mit einer Serienanordnung von Photodioden, die ein MOSFET-gate-Schließ-Potential entwickeln, wenn der Dekodierer-Ausgang eine LED zum Leuchten bewirkt.

[0007] US 5,795,182, erteilt am 18. August 1998, offenbart einen polungsunabhängigen Satz von Batteriestarthilfekabeln, um eine erste Batterie mit einer zweiten Batterie zu überbrücken. Die Vorrichtung weist einen Detektor der relativen Polung auf,

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um zu detektieren, ob zwei Batterien über Kreuz oder parallel angeordnet sind. Ein Drei-Punkt-Hochspannungskapazitätsquerriegeldrehschalter reagiert auf den Detektor der relativen Polung zum automatischen Verbinden des Plus-Anschlusses der beiden Batterien miteinander und der Minus-Anschlüsse der beiden Batterien miteinander, ungeachtet dessen, ob die detektierte Anordnung über Kreuz oder parallel ist, und ein Unterstrom-Detektor und eine Verzögerungsschaltung zum Zurücksetzen der Vorrichtung in ihren Anfangs- und nicht angeschlossenen Zustand, nachdem die Vorrichtung von einer der Batterien getrennt wurde. Der Querriegeldrehschalter weist zwei Kontaktpaare und einen Dreharm auf, der sich um zwei getrennte Punkte dreht, um vollen elektrischen Kontakt zwischen den Kontaktpaaren zu sichern. Die Erfindung kann auch verwendet werden, um eine Batterieladevorrichtung herzustellen, die mit einer Batterie ungeachtet der Batteriepolung verbunden werden kann.

[0008] US 6,262,492, erteilt am 17. Juli 2001, offenbart ein Autobatteriestarterkabel zur passenden Kopplung einer effektiven Spannungsquelle an eine fehlerhafte oder ungeladene Batterie, die eine Relaisschaltungsstromkreis aufweist, welcher mit der Spannungsquelle und der Batterie durch zwei Stromleitungspaare verbunden ist. Erste und zweite Spannungspolungserkennungsschaltungen werden jeweils mit der Spannungsquelle und der Batterie durch ein entsprechendes Spannungsleitungspaar verbunden, um die Polung der Spannungsquelle und der Batterie zu erkennen. Eine Logikerkennungsschaltung erzeugt ein Steuersignal, das abhängig von der Polung der Spannungsquelle und der Batterie ist, und eine Treiberschaltung, die durch ein Steuersignal des Logikerkennungsschaltung gesteuert wird, steuert den Relaisschaltungsstromkreis an, so dass das genaue Koppeln der beiden Pole der Spannungsquelle an die beiden Pole der Batterie ermöglicht wird.

[0009] US 5,635,817, erteilt am 3. Juni 1997, offenbart eine Fahrzeugbatterie-Ladevorrichtung, die ein Steuergehäuse aufweist, das Kabel enthält und, die eine Strombegrenzungsvorrichtung zum Verhindern des Überschreitens eines vorbestimmten maximalen Ladestroms von ungefähr 40 bis 60 A enthält. Das Steuergehäuse weist eine Polungsdetektionsvorrichtung zur Überprüfung der passenden Polung der Verbindung der Anschlüsse der beiden Batterien und zur elektrischen Trennung der beiden Batterien im Falle des Vorliegens einer falschen Polung auf.

[0010] US 8,199,024, erteilt am 12. Juni 2012, offenbart eine Sicherheitsschaltung in einem Niedrigspannungsverbindungssystem, das die beiden Niedrigspannungssysteme getrennt lässt, bis es bestimmt, dass es sicher ist, eine Verbindung aufzubauen. Wenn die Sicherheitsschaltung bestimmt, dass keine unsicheren Bedingungen vorliegen, und dass es sicher ist, die beiden Niedrigspannungssysteme zu verbinden, kann die Sicherheitsschaltung die beiden Niedrigspannungssysteme durch einen „sanften Start" verbinden, der eine Verbindung zwischen den beiden Systemen über eine Zeitdauer bereitstellt, die induzierte Spannungsspitzen auf einem oder mehreren der Niedrigspannungssysteme reduziert oder verhindert. Wenn in einem der Niedrigspannungssysteme eine vollständig entladene Batterie eingebaut ist, wird ein Verfahren für die Detektion der passenden Polung der Verbindungen zwischen den Niedrigspannungssystemen verwendet. Die Bestimmung der Polung der entladenen Batterie erfolgt durch das Durchschicken von einem oder mehreren Testströmen durch die entladene Batterie und durch die Bestimmung, ob ein entsprechender Spannungsanstieg beobachtet wird.

[0011] US 5,793,185, erteilt am 11. August 1998, offenbart eine tragbare Starthilfevorrichtung, die Steuerkomponenten und Schaltungen zur Verhinderung von Überladung und falscher Verbindung von Batterien aufweist.

[0012] Während der Stand der Technik Lösungen für die obengenannten Probleme, wie oben diskutiert, vorschlägt, leidet jede der Lösungen des Stands der Technik an anderen Defiziten, entweder in Bezug auf Komplexität, Kosten oder die Anfälligkeit für Fehlfunktionen. Folglich existiert ein Bedarf in diesem technischen Gebiet nach weiteren Verbesserungen für Starthilfevorrichtungen von Fahrzeugen.

Zusammenfassung der Erfindung

[0013] Gemäß einem Aspekt der Erfindung, wird eine Vorrichtung zur Starthilfe eines Fahrzeugmotors bereitgestellt, die Folgendes aufweist: eine interne Spannungsversorgung; einen positiv und negativ gepolte Ausgänge aufweisenden Ausgangsanschluss; einen Fahrzeugbatterie-Isolationssensor, der mit den positiv und negativ gepolten Ausgängen in einer Schaltung verbunden ist und zur Detektion des Vorhandenseins einer Fahrzeugbatterie konfiguriert ist, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, einen Verpolungssensor, der in einer Schaltung mit den positiv und negativ gepolten Ausgängen verbunden ist und zur Detektion der Polarität einer Fahrzeugbatterie konfiguriert ist, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist, einen Spannungs-FET-Schalter, der zwischen der internen Spannungsversorgung und dem Ausgangsanschluss angeschlossen ist; und ein Mikrocontroller, der zum Empfangen von Eingabesignalen vom Fahrzeug-Isolationssensor und Verpolungssensor und zum Bereitstellen eines Ausgabesignals an den Spannungs-FET-Schalter so konfiguriert ist, dass der Spannungs-FET-Schalter als Antwort auf Signale der Senso-

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ren, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden.

[0014] Gemäß einem weiteren Aspekt der Erfindung, besteht die interne Spannungsversorgung aus einer wieder aufladbaren Lithiumionenbatterieeinheit.

[0015] Gemäß noch einem weiteren Aspekt der Erfindung, wird eine Starthilfekabelvorrichtung bereitgestellt, die einen Stecker aufweist, der zum Einstecken in einen Ausgangsanschluss einer tragbaren Vorrichtung zur Batterieladestarthilfe, die eine interne Spannungsversorgung aufweist, konfiguriert ist; ein Kabelpaar, an dessen jeweiligem einen Ende der Stecker integriert ist; wobei das Kabelpaar zum getrennten Anschließen an die Anschlüsse einer Batterie an dessen jeweiligem anderen Ende konfiguriert ist.

Figurenliste

Fig. 1 stellt einen Funktionsplan einer tragbaren Vorrichtung zur Batteriestarthilfe von Fahrzeigen gemäß einem Aspekt der vorliegenden Erfindung dar;

Fig. 2A-2C stellen schematische Schaltpläne einer beispielhaften Ausführungsform einer tragbaren Vorrichtung zur Batteriestarthilfe von Fahrzeugen gemäß einem Aspekt der vorliegenden Erfindung dar;

Fig. 3 stellt eine perspektivische Ansicht einer tragbaren Vorrichtung zur Starthilfe gemäß einer beispielhaften Ausführungsform der vorliegenden Erfindung dar; und

Fig. 4 stellt eine Draufsicht eines Starthilfekabels dar, das mit der tragbaren Vorrichtung zur Starthilfe gemäß einem weiteren Aspekt der vorliegenden Erfindung verwendbar ist.

Detaillierte Beschreibung der Erfindung

[0016] **Fig. 1** stellt einen Funktionsplan einer tragbaren Vorrichtung zur Batteriestarthilfe gemäß einem Aspekt der vorliegenden Erfindung dar. Das Herzstück der tragbaren Vorrichtung zur Batteriestarthilfe ist eine Lithiumpolymerbatterieeinheit **32**, die genügend Energie speichert, um einem Fahrzeugmotor Starthilfe zu leisten, welcher von einer konventionellen 12 Volt Bleisäure- oder von einer durch ein Ventil regulierten Bleisäure-Batterie beliefert wird. In einer beispielhaften Ausführungsform weist eine Überspannungslithiumpolymerbatterieeinheit drei 3,7 V, 2666 mAh Lithiumpolymerbatterien in einer 3S1P-Konfiguration auf. Die sich ergebende Batterieeinheit liefert 11,1 V, 2666 Ah (8000 Ah bei 3,7 V, 29,6 Wh). Ein kontinuierlicher Entladungsstrom beträgt 25 C (oder 200 A), und eine Entladungsstromspitze beträgt 50 C (oder 400 A). Der maximale Ladungsstrom der Batterieeinheit beträgt 8000 mA (8 A).

[0017] Eine programmierbare Mikrocontrollereinheit (MCU) **1** erhält verschiedene Eingaben und erzeugt Informations- als auch Steuerungsausgaben. Die programmierbare MCU **1** stellt ferner eine Flexibilität für das System bereit, in dem es Aktualisierungen der Funktionalität und der Systemparameter zulässt, ohne eine Änderung der Hardware zu benötigen. Gemäß einer beispielhaften Ausführungsform wird ein 8-bit-Mikrocontroller mit einem 2K x 15-bit-Flash-Speicher verwendet, um das System zu steuern. Ein solcher Mikrocontroller ist HT67F30, der kommerziell bei Holtek Semiconductors Inc. erhältlich ist.

[0018] Eine Autobatterie-Verpolungssensor **10** überwacht die Polung der Fahrzeugbatterie **72**, wenn die tragbare Vorrichtung zur Batteriestarthilfe mit dem elektrischen System des Fahrzeugs verbunden wird. Wie unten erklärt, verhindert die Starthilfevorrichtung, dass die Lithiumbatterieeinheit mit der Fahrzeugbatterie **72** verbunden wird, wenn die Anschlüsse der Batterie **72** mit den falschen Anschlüssen der Starthilfevorrichtung verbunden sind. Ein Autobatterie-Isolationssensor **12** detektiert, ob ein eine Fahrzeugbatterie **72** mit der Starthilfevorrichtung verbunden ist oder nicht, und verhindert, dass die Lithiumbatterieeinheit mit den Ausgangsanschlüssen der Starthilfevorrichtung verbunden wird, es sei denn, dass eine gute (z.B. aufladbare) Batterie an die Ausgangsanschlüsse angeschlossen ist.

[0019] Ein smart-switch-FET-Schaltung **15** schaltet die Lithiumbatterie der tragbaren Vorrichtung zur Batteriestarthilfe elektrisch an das elektrische System des Fahrzeugs, nur wenn bestimmt wird, dass die Fahrzeugbatterie durch die MCU **1** als vorhanden erfasst wird (als Antwort auf ein von einem Isolationssensor **12** bereitgestelltes Detektionssignal) und mit der passenden Polung angeschlossen ist (als Antwort auf ein von einem Verpolungssensor **10** bereitgestelltes Detektionssignal). Ein Lithiumbatterie-Temperatursensor **20** überwacht die Temperatur der Lithiumbatterieeinheit **32**, um eine Überhitzung aufgrund von hohen Umgebungstemperaturbedingungen und übermäßiger Stromaufnahme während des Starthilfevorgangs zu detektieren. Eine Lithiumbatterie-Spannungsmessungsschaltung **24** überwacht die Spannung der Lithiumbatterieeinheit **32**, um das Spannungspotential daran zu hindern, während eines Ladevorgangs zu hoch zusteigen, und während eines Entladevorgangs zu tief zu fallen.

[0020] Lithiumbatterie-Rückladungsschutzdioden **28** verhindern, dass irgendein Ladungsstrom, der an die Fahrzeugbatterie **72** geliefert wird, vom elektri-

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schen System des Fahrzeugs in die Lithiumbatterieeinheit **32** zurückfließt. Eine Blitzlicht-LED-Schaltung **36** wird bereitgestellt, um eine BlitzlichtFunktion zur Verstärkung des Lichts unter der Fahrzeughaube bei dunklen Bedingungen zu liefern, sowie SOS- und Stroboskoplichtfunktionen aus Sicherheitsgründen bereitzustellen, wenn ein Fahrzeug an einem potentiell gefährlichen Ort fahruntauglich wird. Ein Spannungsregler **42** stellt eine Regulierung der internen Betriebsspannung für den Mikrocontroller und die Sensoren bereit. Ein manueller Modus- und Blitzlicht-Ein/Aus-Schalter **46** erlauben es dem Nutzer, das Einschalten der tragbaren Vorrichtung zur Batterieladestarthilfe zu steuern, um den manuellen Starthilfebetrieb zu steuern, wenn das Fahrzeug keine Batterie aufweist, und die Blitzlichtfunktion zu steuern. Der manuelle Knopf funktioniert nur, wenn die Starthilfevorrichtung eingeschaltet ist. Dieser Knopf erlaubt es dem Nutzer, Fahrzeugen Starthilfe zu leisten, denen entweder eine Batterie fehlt, oder deren Batteriespannung so niedrig ist, dass eine automatische Detektion durch die MCU nicht möglich ist. Wenn der Nutzer den manuellen Starthilfeknopf drückt und für eine vorbestimmte Zeit (wie z.B. drei Sekunden) gedrückt hält, um eine ungewollte Betätigung des manuellen Modus zu verhindern, wird die Spannung der internen Lithiumionenbatterie auf den Fahrzeugbatterie-Verbindungsanschluss geschaltet. Die einzige Ausnahme zum manuellen Starthilfebetrieb erfolgt, wenn die Autobatterie verpolt wurde. Wenn die Autobatterie verpolt wurde, sollte die Spannung der internen Lithiumbatterie niemals auf den Fahrzeugbatterie-Verbindungsanschluss geschaltet werden.

[0021] Eine USB-Ladeschaltung **52** wandelt eine Spannung von irgendeiner der USB-Ladespannungsquellen um, so dass Spannung und Strom zum Laden der Lithiumbatterieeinheit **32** geladen werden. Ein USB-Ausgang **56** stellt eine tragbare USB-Ladevorrichtung zum Laden von Smartphones, Tablet-Computern (im Folgenden Tablet genannt) und weiteren wieder aufladbaren elektronischen Vorrichtungen bereit. LEDs zur Betriebszustandsanzeige **60** stellen eine visuelle Anzeige des Lithiumbatterie-Kapazitätsstatus sowie eine Anzeige des Aktivierungsstatus des smartswitchs dar (die anzeigt, dass dem elektrischen System eine Spannung bereitgestellt wird).

[0022] Ein detaillierter Betrieb der tragbaren Starthilfevorrichtung wird nun gemäß den schematischen Diagrammen der **Fig. 2A** bis **Fig. 2C** beschrieben werden. Wie in **Fig. 2A** gezeigt, stellt die Mikrocontrollereinheit **1** das Zentrum aller Ein- und Ausgänge dar. Der Batterie-Verpolungssensor **10** umfasst einen optisch gekoppelten Isolationsphototransistor (4N27), der mit den Anschlüssen der Fahrzeugbatterie **72** an den Eingangspins **1** und **2** mit einer Diode **D8** im Leiterdraht des Pins **1** (der am negativen Anschluss CB- angeschlossen ist), so dass, falls die Batterie **72** mit den Anschlüssen der Starthilfevorrichtung mit passender Polung verbunden ist, die LED des optischen Kopplers **11** keinen Strom leiten wird, und deshalb ausgeschaltet wird, wobei der MCU **1** eine „1" oder ein hohes Ausgabesignal bereitgestellt wird. Der Autobatterie-Isolationssensor **12** umfasst einen optisch gekoppelten Isolationsphototransistor (4N27), der mit den Anschlüssen der Fahrzeugbatterie **72** an den Eingangspins **1** und **2** mit einer Diode **D7** im Leitungsdraht des Pins **1** (angeschlossen an den positiven Anschluss CB+) verbunden ist, so dass, falls die Batterie **72** an die Anschlüsse der Starthilfevorrichtung mit der passenden Polung verbunden ist, die LED des optischen Kopplers **11A** einen Strom leiten wird, und deshalb eingeschaltet wird, wobei der MCU eine „0" oder ein niedriges Ausgabesignal bereitgestellt wird, und das Vorhandensein einer Batterie über die Starthilfeausgangsanschlüsse der tragbaren Starthilfevorrichtung anzeigt.

[0023] Falls die Autobatterie **72** mit der tragbaren Starthilfevorrichtung verpolt verbunden ist, wird die LED des optischen Kopplers **11** des Verpolungssensors **10** den Strom leiten, wobei der Mikrocontrollereinheit **1** eine „0" oder ein niedriges Signal bereitgestellt wird. Ferner, falls keine Batterie mit der tragbaren Starthilfevorrichtung verbunden ist, wird die LED des optischen Kopplers **11A** des Isolationssensors **12** keinen Strom leiten und wird deshalb ausgeschaltet, wobei der MCU eine „1" oder ein hohes Ausgabesignal bereitgestellt wird, das die Abwesenheit irgendeiner mit der tragbaren Starthilfevorrichtung verbundener Batterie anzeigt. Unter Verwendung dieser spezifischen Eingaben kann die Mikrocontrollersoftware der MCU **1** bestimmen, wann es sicher ist, den smart-switch-FET 15 einzuschalten, wodurch die Lithiumbatterieeinheit mit den Starthilfeanschlüssen der Starthilfevorrichtung verbunden wird. Folglich kann die MCU **1** den smart-switch-FET-Schaltung 15 davor bewahren, eingeschaltet zu werden und somit das Erzeugen von Funken/Kurzschlüssen der Lithiumbatterieeinheit verhindert werden, wenn die Autobatterie **72** entweder überhaupt nicht mit der Starthilfevorrichtung verbunden ist oder verpolt verbunden ist.

[0024] Wie in **Fig. 2B** gezeigt, wird der smart-switch-FET **15** durch eine Mikrocontrollerausgabe **1** angesteuert. Der FET-smart-switch **15** weist drei FETs (**Q15**, **Q18** und **Q19**) in Parallelschaltung auf, die die Spannung der Lithiumbatterieeinheit auf die FETs verteilt. Wenn diese Mikrocontrollerausgabe in einen logisch niedrigen Zustand gesteuert wird, befinden sich die FETs **16** alle in einem Hochwiderstandszustand, weswegen kein Stromfluss vom negativen Kontakt **17** der internen Lithiumbatterie zum negativen Kontakt der Autobatterie **72** zugelassen wird. Wenn die Mikrocontrollerausgabe in einen logisch hohen Zustand gesteuert wird, sind die FETs **16** (Q15, Q18, Q19) in einem Niedrigwiderstandszustand, der einen freien Stromfluss vom negativen

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Kontakt **17** (LB-) der internen Lithiumbatterieeinheit zum negativen Kontakt (CB-) der Autobatterie **72** zulässt. Auf diese Art steuert die Mikrocontrollersoftware die Verbindung der internen Lithiumbatterieeinheit **32** mit der Fahrzeugbatterie **72**, um dem Fahrzeugmotor Starthilfe zu leisten.

[0025] Gemäß **Fig. 2A**, kann die Spannung der internen Lithiumbatterieeinheit unter Verwendung der Schaltung **24** und einem der Analog-zu-Digital-Eingänge des Mikrocontrollers **1** präzise gemessen werden. Die Schaltung **24** ist vorgesehen, um zu erfassen, wann die Spannung des Haupt-3,3 V-Reglers **42** eingeschaltet ist und den Transistor **23** einzuschalten, wenn die Spannung des Reglers **42** eingeschaltet ist. Wenn der Transistor **23** leitet, schaltet er den FET **22** ein, womit dem positiven Kontakt (LB+) der internen Lithiumbatterie ein leitender Pfad zu einem Spannungsteiler **21** bereitgestellt wird, der es zulässt, der Mikrocontroller einen niedrigeren Spannungsbereich zum Einlesen zuzuführen. Durch Verwendung dieser Eingabe kann die Mikrocontrollersoftware bestimmen, ob die Lithiumbatteriespannung während des Entladevorgangs zu niedrig oder während des Aufladevorgangs zu hoch ist, und sie kann eine entsprechende Maßnahme zur Verhinderung der Beschädigung der elektronischen Komponenten unternehmen.

[0026] Weiterhin kann gemäß **Fig. 2A** durch zwei Vorrichtungen **20** mit negativem Temperaturkoeffizienten (NTC) die Temperatur der internen Lithiumbatterieeinheit **32** präzise gemessen werden. Dies sind Vorrichtungen, die ihren Widerstand verringern, wenn ihre Temperatur steigt. Die Schaltung stellt einen Spannungsteiler dar, der das Ergebnis den beiden Analog-zu Digital-(A/D)-Eingänge dem Mikrocontroller zuführt. Die Mikrocontrollersoftware kann dann bestimmen, wann die interne Lithiumbatterie zu heiß ist, um einen Starthilfevorgang zuzulassen, wodurch der Aufbau Betriebssicherheit erhält.

[0027] Die Hauptspannungsreglersschaltung **42** ist so gestaltet, dass die Spannung der internen Lithiumbatterie in einen geregelten Wert von 3,3 V umgewandelt wird, der vom Mikrocontroller **1** sowie von anderen Komponenten der Starthilfevorrichtung für die interne Betriebsspannung verwendet wird. Drei Lithiumbatterie-Rückaufladungs-(back-charging)-Schutzdioden **28** (siehe **Fig. 2B)** werden eingesetzt, um den Stromfluss nur von der internen Lithiumbatterieeinheit **32** zur Autobatterie **72** zuzulassen, und nicht von der Autobatterie zur internen Lithiumbatterie. Auf diese Art kann, falls das elektrische System des Autos von seiner Lichtmaschine geladen wird, die interne Lithiumbatterie nicht rückaufladen (und hierbei beschädigt werden), was eine weitere Stufe der Betriebssicherheit bereitstellt.

[0028] Der Hauptspannungseinschalter **46 (Fig. 2A)** ist eine Kombination, die einen Doppelpol- oder Zweiwegebetrieb zulässt, so dass das Produkt mit einem Drücken eingeschaltet werden kann, wenn es sich im Aus-Zustand befindet, oder ausgeschaltet werden kann, wenn es sich im Ein-Zustand befindet. Diese Schaltung verwendet auch einen Mikrocontrollerausgang **47**, um die Spannung aufrecht zu erhalten, wenn die Schaltung durch den Ein-Schalter aktiviert wurde. Wenn der Schalter gedrückt wird, schiebt der Mikrocontroller diesen Ausgang auf eine Hochlogikstufe, um die Spannung „am Leben" zu erhalten, wenn der Schalter losgelassen wird. Auf diese Art behält der Mikrocontroller die Kontrolle, wenn die Spannung ausgeschaltet wird, wenn der Ein-/Aus-Schalter wieder aktiviert wird, oder wenn die Lithiumbatteriespannung zu niedrig wird. Die Mikrocontrollersoftware weist auch einen Zeitschalter auf, der die Spannung nach einer vorbestimmten Zeitdauer (wie z.B. 8 Stunden) bei Nichtverwendung ausschaltet.

[0029] Die Blitzlicht-LED-Schaltung **45**, die in **Fig. 2B** gezeigt wird, steuert den Betrieb der Blitzlicht-LEDs. Zwei Ausgänge des Mikrocontrollers **1** sind den beiden separaten LEDs zugeordnet. Daher können die LEDs zur Ausbildung von Stroboskopen und SOS-Mustern unabhängig softwaregesteuert werden, was der Starthilfevorrichtung noch ein weiteres Sicherheitsmerkmal hinzugefügt. LED-Anzeigen geben dem Betreiber die Rückmeldung, die dieser braucht, um zu verstehen, was mit dem Produkt passiert. Vier separate LEDs **61 (Fig. 2A)** werden durch entsprechende einzelne Ausgänge des Mikrocontrollers **1** gesteuert, um eine Anzeige der verbleibenden Kapazität der internen Lithiumbatterie bereitzustellen. Diese LEDs werden in einem Format vergleichbar dem einer „Kraftstoffanzeige" mit 25%-, 50%-, 75%- und 100%-(rot, rot, gelb, grün)-Kapazitätsanzeigen gesteuert. Eine LED-Anzeige **63 (Fig. 2B)** gibt dem Benutzer eine visuelle Warnung, wenn die Fahrzeugbatterie **72** verpolt angeschlossen worden ist. Starthilfe- und Ein-/Aus-LEDs **62** stellen jeweils visuelle Anzeigen bereit, wenn die Starthilfevorrichtung Starthilfespannung bereitstellt, und wenn die Starthilfevorrichtung eingeschaltet wird.

[0030] Eine USB-Ausgangsschaltung **56 (Fig. 2C)** weist einen USB-Ausgang auf, zum Laden von tragbaren elektronischen Vorrichtungen, wie z.B. Smartphones durch die interne Lithiumbatterieeinheit **32**. Eine Steuerschaltung **57** des Mikrocontrollers **1** lässt es zu, den USB-Ausgang **56** durch die Softwaresteuerung ein- oder auszuschalten, um zu verhindern, dass die interne Lithiumbatterie eine zu niedrige Kapazität erreicht. Die USB-Ausgabe wird mittels einer Standard-USB-Verbindung **58** an das Äußere der Vorrichtung geführt, wobei die Standard-USB-Verbindung **58** den erforderlichen Standardspannungsteiler aufweist, um es zu ermöglichen, Smartphones eine

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bestimmte Spannung zuzuführen, die sie benötigenden..

[0031] Die USB-Ladeschaltung **52** lässt es zu, dass die interne Batterieeinheit **32** durch eine Standard-USB-Ladevorrichtung geladen wird. Dieser Spannungseingang verwendet eine Standard-Mikro-USB-Verbindung **48**, die es erlaubt, Standardkabel zu verwenden. Das von der Standard-USB-Ladevorrichtung bereitgestellte Potential von 5 V wird in 12,4 V DC-Spannung hochgewandelt, das zum Laden der internen Lithiumbatterieeinheit unter Verwendung eines DC-DC-Konverters **49** benötigt wird. Der DC-DC-Konverter **49** kann durch die Schaltung **53** mittels eines Mikrocontrollerausgangs **1** ein- und ausgeschaltet werden.

[0032] Auf diese Art kann die Mikrocontrollersoftware den Ladevorgang ausschalten, falls die Batteriespannung durch den A/D-Eingang **22** als zu hoch bestimmt worden ist. Zusätzliche Betriebssicherheit wird zur Abhilfe der Beseitigung von Überladung der internen Lithiumbatterie durch Verwendung einer Lithiumbatterie-Ladesteuerung **50** bereitgestellt, die einen Ladungsausgleich der internen Lithiumbatteriezellen **51** bereitstellt. Diese Steuerung stellt auch eine redundante Betriebssicherheit zur Beseitigung von Überladung der internen Lithiumbatterie bereit.

[0033] **Fig. 3** stellt eine perspektivische Ansicht einer tragbaren Vorrichtung **300** gemäß einer beispielhaften Ausführungsform der Erfindung dar. **301** ist ein Spannungseinschalter. **302** zeigt die LED-„Kraftstoff"-Anzeigen **61**. **303** zeigt einen **12** V-Ausgangsanschluss, der mit einer weiter unten beschriebenen Kabelvorrichtung **400** verbindbar ist. **304** zeigt einen Blitzlichtsteuerungsschalter zum Aktivieren der Blitzlicht-LEDs **45**. **305** stellt einen USB-Eingangsanschluss zum Laden der internen Lithiumbatterie dar, und **306** ist ein USB-Ausgangsanschluss, um anderen tragbaren Vorrichtungen, wie z.B. Smartphones, Tablets, Musikspieler, usw., Ladung durch die Lithiumbatterie bereitzustellen. **307** stellt eine „Starthilfe-Ein"-Anzeige dar, die anzeigt, dass die Spannung dem **12** V-Ausgangsanschluss bereitgestellt wird. **308** stellt eine Verpolungsanzeige dar, die anzeigt, dass die Fahrzeugbatterie in Bezug auf die Polung falsch verbunden ist. **309** stellt eine „Spannung-Ein"-Anzeige dar, die anzeigt, dass die Vorrichtung für den Betrieb hochgefahren ist.

[0034] **Fig. 4** zeigt eine Starthilfekabelvorrichtung **400**, die insbesondere für eine Verwendung mit der tragbaren Vorrichtung **300** ausgestaltet ist. Die Vorrichtung **400** weist einen Stecker **401** auf, der so gestaltet ist, dass er in den **12** V-Ausgangsanschluss **303** der tragbaren Vorrichtung **300** einsteckt werden kann. Der Stecker **401** ist in einem Kabelpaar **402a** und **402b** integriert, und die Kabel sind jeweils mit den Batterieanschlussklemmen **403a** und **403b** mittels Ringanschlüssen **404a** und **404b** verbunden. Der Anschluss **303** und der Stecker **401** können so dimensioniert werden, dass der Stecker **401** nur in den Anschluss **303** in einer bestimmten Orientierung passt, wodurch gesichert ist, dass die Klemme **403a** einer positiven Polung entsprechen wird, und die Klemme **403b** einer negativen Polung entsprechen wird, wie darauf angegeben. Zusätzlich können die Ringanschlüsse **404a** und **404b** von den Klemmen getrennt werden und direkt mit den Anschlüssen der Fahrzeugbatterie verbunden werden. Dieses Merkmal kann nützlich sein, um beispielsweise die Kabel **402a** bis **402b** dauerhaft mit der Fahrzeugbatterie zu verbinden. Im Falle einer Erschöpfung der Batteriespannung könnte die tragbare Starthilfevorrichtung **300** durch Einstecken des Steckers **401** in den Anschluss **303** in sehr einfacher Weise passend mit der Batterie verbunden werden.

[0035] Die Erfindung, die auf diese Weise beschrieben wurde, wird dem Fachmann ersichtlich sein, so dass diese in vielen Arten variiert werden kann, ohne vom Umfang der Erfindung abzuweichen. Jede und alle solche Variationen werden innerhalb des Umfangs der folgenden Ansprüche erfasst.

[0036] Es folgen Ausführungsbeispiele:

1. Vorrichtung zur Starthilfe eines Fahrzeugmotors, umfassend: eine interne Spannungsversorgung (**32**); einen positiv und negativ gepolte Ausgänge (**CB-**, **CB+**) aufweisenden Ausgangsanschluss (**303**); einen Fahrzeugbatterie-Isolationssensor (**12**), der mit den positiv und negativ gepolten Ausgängen (**CB-**, **CB+**) in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie (**32**), die zwischen den positiv und negativ gepolten Ausgängen (**CB-**, **CB+**) angeschlossen ist, konfiguriert ist; einen Verpolungssensor (**10**), der in einer Schaltung mit den positiv und negativ gepolten Ausgängen (**CB-**, **CB+**) verbunden ist, und zur Detektion der Polarität einer Fahrzeugbatterie (**72**), die zwischen den positiv und negativ gepolten Ausgängen (**CB-**, **CB+**) angeschlossen ist, konfiguriert ist; ein Spannungs-FET-Schalter (**15**), der zwischen der internen Spannungsversorgung (**32**) und dem Ausgangsanschluss (**305**) angeschlossen ist; und ein Mikrocontroller (**1**), der zum Empfangen von Eingabesignalen vom Fahrzeug-Isolationssensor (**12**) und vom Verpolungssensor (**10**) und zum Bereitstellen eines Ausgabesignals an den Spannungs-FET-Schalter (**15**) so konfiguriert ist, dass der Spannungs-FET-Schalter (**15**) als Antwort auf Signale der Sensoren, die das Vorhandensein einer Fahrzeugbatterie (**72**) am Ausgangsanschluss (**303**) und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie (**72**) mit positiv und negativ gepolten Ausgängen (**CB-**, **CB+**) anzeigen, ein-

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geschaltet wird, um die interne Spannungsversorgung (**32**) mit dem Ausgangsanschluss (**303**) zu verbinden.

2. Die Vorrichtung gemäß Beispiel 1, wobei die interne Spannungsversorgung (**32**) eine Lithiumionenbatterie umfasst.

3. Die Vorrichtung gemäß Beispiel 2, wobei die Lithiumionenbatterie eine Batterieeinheit aus mehreren Lithiumionenbatterien umfasst.

4. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, wobei der Spannungs-FET-Schalter (**15**) eine Vielzahl von FETs in Parallelschaltung (**16**) umfasst.

5. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, wobei der Fahrzeug-Isolationssensor (**12**) und der Verpolungssensor (**10**) optisch gekoppelte Isolationsphototransistoren umfassen.

6. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Vielzahl von Spannungsdioden (**28**), die zwischen den Ausgangsanschluss (**303**) und der internen Spannungsversorgung (**32**) gekoppelt sind, um eine Rückaufladung der internen Spannungsversorgung (**32**) durch ein an den Ausgangsanschluss (**303**) angeschlossenes elektrisches System zu verhindern.

7. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen Temperatursensor (**20**)zur Detektion der Temperatur der internen Spannungsversorgung (**32**) und zum Bereitstellen eines Temperatursignals an den Mikrocontroller (**1**).

8. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Spannungsmessungsschaltung (**24**), die zur Messung der Ausgabespannung der internen Spannungsversorgung (**32**) und zum Bereitstellen eines Spannungsmessungssignals an den Mikrocontroller (**1**) konfiguriert ist.

9. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend ein Spannungsregler (**42**), der zur Umwandlung der Ausgabespannung der internen Spannungsversorgung (**32**) in einen Spannungspegel konfiguriert ist, der geeignet ist, um internen Komponenten der Vorrichtung eine Betriebsspannung bereitzustellen.

10. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen USB-Ausgangsanschluss (**56**), der zum Bereitstellen einer Ladungsspannung der internen Spannungsversorgung (**32**) an eine USB-ladbare Vorrichtung konfiguriert ist.

11. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen USB-Ladeanschluss (**52**), der zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die interne Spannungsversorgung (**32**) konfiguriert ist.

12. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen Blitzlicht-Schaltung (**36**, **45**), die zum Bereitstellen einer Lichtquelle für einen Nutzer konfiguriert ist.

13. Die Vorrichtung gemäß Beispiel 12, wobei die Lichtquelle mindestens eine LED ist.

14. Die Vorrichtung gemäß Beispiel 13, wobei der Mikrocontroller (**1**) zur Kontrolle der mindestens einen LED konfiguriert ist, um einen visuellen Alarm zur Anzeige einer Notsituation bereitzustellen.

15. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Vielzahl von visuellen Anzeigen (**61**), die zur Anzeige des verbleibenden Kapazitätszustands der internen Spannungsversorgung (**32**) konfiguriert sind.

16. Die Vorrichtung gemäß Beispiel 15, wobei die Vielzahl von visuellen Anzeigen (**61**) eine Vielzahl von LEDs umfassen, die Licht verschiedener Farben ausgeben.

17. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine visuelle Anzeige (**63**), die zur Warnung eines Benutzers konfiguriert ist, wenn eine Batterie verpolt angeschlossen ist.

18. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend getrennte visuelle Anzeigen (**62**), die zur Anzeige des Spannung-An-Status der Vorrichtung und zur Anzeige des Status der Starthilfespannung der dem Ausgangsanschluss (**303**) bereitgestellten Spannung konfiguriert ist.

19. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen manuelle Starthilfeschalter, der zum Aktivieren eines manuellen Starthilfemodus konfiguriert ist, der es einem Benutzer ermöglicht, die Starthilfespannung mit dem Ausgangsanschluss (**303**) zu verbinden, wenn der Fahrzeugbatterie-Isolationssensor (**12**) das Vorhandensein einer Fahrzeugbatterie nicht detektieren kann.

20. Die Vorrichtung gemäß Beispiel 19, wobei der Mikrocontroller (**1**) zur Detektion der manuellen Starthilfeschaltung für mindestens eine vorbestimmte Zeitdauer vor dem Aktivieren des manuellen Starthilfemodus konfiguriert ist.

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21. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Starthilfekabelvorrichtung (**400**), die einen Stecker (**401**) umfasst, zum Einstecken in den Ausgangsanschluss, ein Kabelpaar (**402a**, **402b**), an dessen jeweiligem einen Ende der Stecker (**401**) integriert ist und zum Anschließen an die Anschlüsse einer Batterie an dessen jeweiligem anderen Ende konfiguriert sind.

22. Die Vorrichtung gemäß Beispiel 21, wobei das Starthilfekabel ferner ein Paar von Ringanschlüssen (**404a**, **404b**) umfasst, die zum jeweiligen Verbinden des Kabelpaars (**402a**, **402b**) an dessen anderem Ende mit einem Ende eines Batterieanschlusses oder einer Batterieanschlussklemme konfiguriert sind.

23. Die Vorrichtung gemäß irgendeinem der Beispiele 21 oder 22, wobei der Ausgangsanschluss (**303**) und der Stecker (**401**) so dimensioniert sind, dass der Stecker (**401**) nur in einer bestimmten Orientierung in den Ausgangsanschluss (**303**) passt.

24. Eine Starthilfekabelvorrichtung (**400**), umfassend einen Stecker (**401**), der zum Stecken in einen Ausgangsanschluss (**303**) einer tragbaren Vorrichtung zur Batterieladestarthilfe (**300**) konfiguriert ist, die eine interne Spannungsversorgung aufweist; ein Kabelpaar (**402a**, **402b**), das mit dem Stecker (**401**) an dessen einen entsprechenden Ende integriert ist; wobei das Kabelpaar (**402a**, **402b**) so konfiguriert ist, dass es gesondert an Anschlüssen einer Batterie mit dessen entsprechend anderem Ende angeschlossen werden soll.

25. Die Starthilfekabelvorrichtung (**400**) gemäß Beispiel 24, ferner umfassend ein Paar von Ringanschlüssen (**404a**, **404b**), die zum jeweiligen Verbinden des Kabelpaars (**402a**, **402b**) an dessen anderen Ende mit einem Batterieanschluss oder einer Batterieanschlussklemme konfiguriert sind.

26. Die Starthilfekabelvorrichtung (**400**) gemäß irgendeinem der Beispiele 24 oder 25, wobei der Ausgangsanschluss (**303**) und der Stecker (**401**) so dimensioniert sind, dass der Stecker (**401**) nur in einer bestimmten Richtung in den Ausgangsanschluss (**303**) passt.

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ZITATE ENTHALTEN IN DER BESCHREIBUNG

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Schutzansprüche

1. Vorrichtung zur Starthilfe eines Fahrzeugmotors, umfassend:
eine interne Spannungsversorgung (32);
einen Ausgangsanschluss (303) mit positiv und negativ gepolten Ausgängen (CB-, CB+);
einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Ausgängen (CB-, CB+) in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;
einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Ausgängen (CB-, CB+) verbunden ist, und zur Detektion der Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;
und zur Bereitstellung eines Ausgangssignals konfiguriert ist, das anzeigt ob die positiven und negativen Anschlüsse der Fahrzeugbatterie (72), richtig an die positiv und negativ gepolten Ausgänge des Ausgangsanschluss (303) angeschlossen sind,
einen Spannungs-Schalter (15), der zwischen der internen Spannungsversorgung (32) und dem Ausgangsanschluss (305) angeschlossen ist; und
einen Mikrocontroller (1), der zum Empfangen von Eingabesignalen vom Fahrzeugbatterie-Isolationssensor (12) und vom Verpolungssensor (10) und zum Bereitstellen eines Ausgabesignals an den Spannungs-Schalter (15) konfiguriert ist, so dass der Spannungs-Schalter (15) als Antwort auf Signale der Sensoren, die das Vorhandensein einer Fahrzeugbatterie (72) am Ausgangsanschluss (303) und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie (72) mit positiv und negativ gepolten Ausgängen (CB-, CB+) anzeigen, eingeschaltet wird, um die interne Spannungsversorgung (32) mit dem Ausgangsanschluss (303) zu verbinden, und wobei der Spannungs-Schalter (15) nicht eingeschaltet wird, wenn Signale von den Sensoren, entweder das Fehlen einer Fahrzeugbatterie (72) am Ausgangsanschluss (303) oder eine ungeeignete Polverbindung der positiven und negativen Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Ausgängen (CB-, CB+) anzeigen.

2. Vorrichtung zur Starthilfe eines Fahrzeugs mit einer erschöpften oder entladenen Fahrzeugbatterie (72) mit positiv und negativ gepolten Anschlüssen; umfassend:
eine Spannungsversorgung (32);
einen positiv gepolten Fahrzeugbatterieanschlussverbinder (CB+);
einen negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-);
einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) in einer Schaltung verbunden ist, wobei der Fahrzeugbatterie-Isolationssensor (12) eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) zu detektieren, wenn diese zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;
einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden ist,
wobei der Verpolungssensor (10) eingerichtet ist eine Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist, zu detektieren und ein Ausgabesignal bereitzustellen, welches anzeigt, dass die positiv und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) richtig mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden sind,
einen Spannungs-Schalter (15), der zwischen der Spannungsversorgung (32) und den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;
einen Mikrocontroller (1), der eingerichtet ist Eingabesignale vom Fahrzeugbatterie -Isolationssensor (12) und vom Verpolungssensor (10) zu empfangen, und den Betrieb des Spannungs-Schalters (15) zu steuern,
wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) einzuschalten, wenn Eingabesignale vom Fahrzeugbatterie-Isolationssensor (12) und vom Verpolungssensor (10) empfangen werden, die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüssen der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen,
wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) auszuschalten, wenn Eingabesignale von den Sensoren (12, 10) empfangen werden, die sowohl ein Nichtvorhandensein der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) und/oder eine nicht korrekte Polaritätsverbindung der positiv und negativ gepolten Anschlüssen der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen.

3. Vorrichtung zur Starthilfe eines Fahrzeugs mit einer erschöpften oder entladenen Fahrzeugbatterie (72) mit positiv und negativ gepolten Anschlüssen; umfassend:
eine Spannungsversorgung (32);

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einen positiv gepolten Fahrzeugbatterieanschlussverbinder (CB+);
einen negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-);
einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) in einer Schaltung verbunden ist, wobei der Fahrzeugbatterie-Isolationssensor (12) eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) zu detektieren, wenn diese zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;
einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden ist,
wobei der Verpolungssensor (10) eingerichtet ist eine Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist, zu detektieren und ein Ausgabesignal bereitzustellen, welches anzeigt, dass die positiv und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) richtig mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden sind,
einen Spannungs-Schalter (15), der zwischen der Spannungsversorgung (32) und den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;
einen Mikrocontroller (1), der eingerichtet ist Eingabesignale vom Fahrzeugbatterie -Isolationssensor (12) und vom Verpolungssensor (10) zu empfangen, wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) einzuschalten, um die Spannungsversorgung (32) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB+) zu verbinden, als Antwort auf ein gleichzeitiges Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen,
wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) auszuschalten, um zu eine Verbindung der Spannungsversorgung (32) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB+) zu verhindern, als Antwort auf ein nicht gleichzeitiges Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen.

4. Vorrichtung zur Starthilfe eines Fahrzeugs mit einer erschöpften oder entladenen Fahrzeugbatterie (72) mit positiv und negativ gepolten Anschlüssen; umfassend:
eine Spannungsversorgung (32);
einen positiv gepolten Fahrzeugbatterieanschlussverbinder (CB+);
einen negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-);
einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) in einer Schaltung verbunden ist,
wobei der Fahrzeugbatterie-Isolationssensor (12) eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) zu detektieren, wenn diese zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;
einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden ist,
wobei der Verpolungssensor (10) eingerichtet ist eine Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist, zu detektieren und ein Ausgabesignal bereitzustellen, welches anzeigt, dass die positiv und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) richtig mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden sind,
einen Spannungs-Schalter (15), der zwischen der Spannungsversorgung (32) und den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;
einen Mikrocontroller (1), der eingerichtet ist Eingabesignale vom Fahrzeugbatterie -Isolationssensor (12) und vom Verpolungssensor (10) zu empfangen, wobei der Mikrocontroller (1) eingerichtet ist, ein aktivierendes Ausgabesignal bereitzustellen, um den Spannungs-Schalter (15) einzuschalten, um den Spannungsversorgung (32) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB+) zu verbinden, als Antwort auf ein gleichzeitiges Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen,
wobei der Mikrocontroller (1) eingerichtet ist, ein deaktivierendes Ausgabesignal bereitzustellen, um den Spannungs-Schalter (15) auszuschalten, um zu eine Verbindung der Spannungsversorgung (32) mit

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den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB+) zu unterbrechen, als Antwort auf ein Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die ein Nichtvorhandensein der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbundenen Fahrzeugbatterie (72) und/oder eine nicht korrekte Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB +) anzeigen.

5. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei der Fahrzeug-Isolationssensor (12) ein separater Isolationssensor (12) ist, der eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzuzeigen.

6. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei der Fahrzeug-Isolationssensor (12) ein Vorhandensein oder ein Fehlen der Fahrzeugbatterie (72) vor jeder anfänglichen Verbindung detektiert und nicht auf einer vorab gebildeten Verbindung oder Betrieb der Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+).

7. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) eine positive Polaritätsbatterieklemme und eine negative Polaritätsbatterieklemme aufweisen.

8. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) eine positive Polaritätsbatterieklemme umfassen, die mit dem positiven Polaritäts-Batteriekabel verbunden ist und eine negative Polaritätsbatterieklemme umfassen, die mit dem negativen Polaritäts-Batteriekabel verbunden ist

9. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, weiter umfassend einen Ausgangsanschluss (303) mit den positiv und negativ gepolten Ausgängen, wobei der Ausgangsanschluss (303) eingerichtet ist, mit einem einzelnen entfernbaren Stecker verbunden zu werden, wobei der einzelne Stecker mit den positiven und negativen Kabeln verbunden ist.

10. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, wobei die interne Spannungsversorgung (32) eine Lithiumionenbatterie umfasst.

11. Die Vorrichtung gemäß Anspruch 10, wobei die Lithiumionenbatterie eine Batterieeinheit aus mehreren Lithiumionenbatterien umfasst.

12. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, wobei der Spannungs-Schalter (15) eine Vielzahl von FETs in Parallelschaltung (16) umfasst.

13. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, wobei der Fahrzeug-Isolationssensor (12) und der Verpolungssensor (10) optisch gekoppelte Isolationsphototransistoren umfassen.

14. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Vielzahl von Spannungsdioden (28), die zwischen die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) und die Spannungsversorgung (32) gekoppelt sind, um eine Rückaufladung der Spannungsversorgung (32) durch ein an die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) angeschlossenes elektrisches System zu verhindern.

15. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend einen Temperatursensor (20) zur Detektion der Temperatur der Spannungsversorgung (32) und zum Bereitstellen eines Temperatursignals an den Mikrocontroller (1).

16. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Spannungsmessungsschaltung (24), die zur Messung der Ausgabespannung der Spannungsversorgung (32) und zum Bereitstellen eines Spannungsmessungssignals an den Mikrocontroller (1) konfiguriert ist.

17. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend ein Spannungsregler (42), der zur Umwandlung der Ausgabespannung der Spannungsversorgung (32) in einen Spannungspegel konfiguriert ist, der geeignet ist, um internen Komponenten der Vorrichtung eine Betriebsspannung bereitzustellen.

18. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend einen USB-Ausgangsanschluss (56), der zum Bereitstellen einer Ladungsspannung der internen Spannungsversorgung (32) an eine USB-ladbare Vorrichtung konfiguriert ist.

19. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend einen USB-Ladeanschluss (52), der zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die Spannungsversorgung (32) konfiguriert ist.

20. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Blitzlicht-

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Schaltung (36, 45), die zum Bereitstellen einer Lichtquelle für einen Nutzer konfiguriert ist.

21. Die Vorrichtung gemäß Anspruch 20, wobei die Lichtquelle mindestens eine LED ist.

22. Die Vorrichtung gemäß Anspruch 20, wobei der Mikrocontroller (1) zur Steuerung der mindestens einen LED konfiguriert ist, um einen visuellen Alarm zur Anzeige einer Notsituation bereitzustellen.

23. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Vielzahl von visuellen Anzeigen (61), die zur Anzeige des verbleibenden Kapazitätszustands der Spannungsversorgung (32) konfiguriert sind.

24. Die Vorrichtung gemäß Anspruch 23, wobei die Vielzahl von visuellen Anzeigen (61) eine Vielzahl von LEDs umfassen, die Licht verschiedener Farben ausgeben.

25. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine visuelle Anzeige (63), die zur Warnung eines Benutzers konfiguriert ist, wenn eine Fahrzeugbatterie (72) verpolt angeschlossen ist.

26. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend getrennte visuelle Anzeigen (62), die zur Anzeige des Spannung-An-Status der Vorrichtung und zur Anzeige des Status der Starthilfespannung der den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) bereitgestellten Spannung konfiguriert ist.

27. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen manuelle Starthilfeschalter, der zum Aktivieren eines manuellen Starthilfemodus konfiguriert ist, der es einem Benutzer ermöglicht, die Starthilfespannung mit der Fahrzeugbatterie (72) zu verbinden, wenn der Fahrzeugbatterie-Isolationssensor (12) das Vorhandensein einer Fahrzeugbatterie nicht detektieren kann.

28. Die Vorrichtung gemäß Anspruch 27, wobei der Mikrocontroller (1) zur Detektion der Aktivierung der manuellen Starthilfeschaltung für mindestens eine vorbestimmte Zeitdauer vor dem Aktivieren des manuellen Starthilfemodus konfiguriert ist.

29. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend eine Starthilfekabelvorrichtung (400), die einen Stecker (401) zum Einstecken in den Ausgangsanschluss und ein Paar Batteriekabel (402a, 402b) umfasst, an deren einem entsprechenden Ende der Stecker (401) integriert ist und die zum Anschließen an die Anschlüsse einer Fahrzeugbatterie (72) an dessen jeweiligem anderen Ende konfiguriert sind.

30. Die Vorrichtung gemäß Anspruch 29, wobei das Starthilfekabel ferner ein Paar von Ringanschlüssen (404a, 404b) umfasst, die zum jeweiligen Verbinden des Batteriekabelpaars (402a, 402b) an dessen anderem Ende mit einem Ende eines positiven oder negativen Batterieanschlusses oder einer positiven oder negativen Batterieanschlussklemme konfiguriert sind.

31. Die Vorrichtung gemäß irgendeinem der Ansprüche 29 oder 30, wobei der Ausgangsanschluss (303) und der Stecker (401) so dimensioniert sind, dass der Stecker (401) nur in einer bestimmten Orientierung in den Ausgangsanschluss (303) passt.

Es folgen 13 Seiten Zeichnungen

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FIG. 1

Anhängende Zeichnungen

DE 20 2014 011 347 U1 2019.11.21

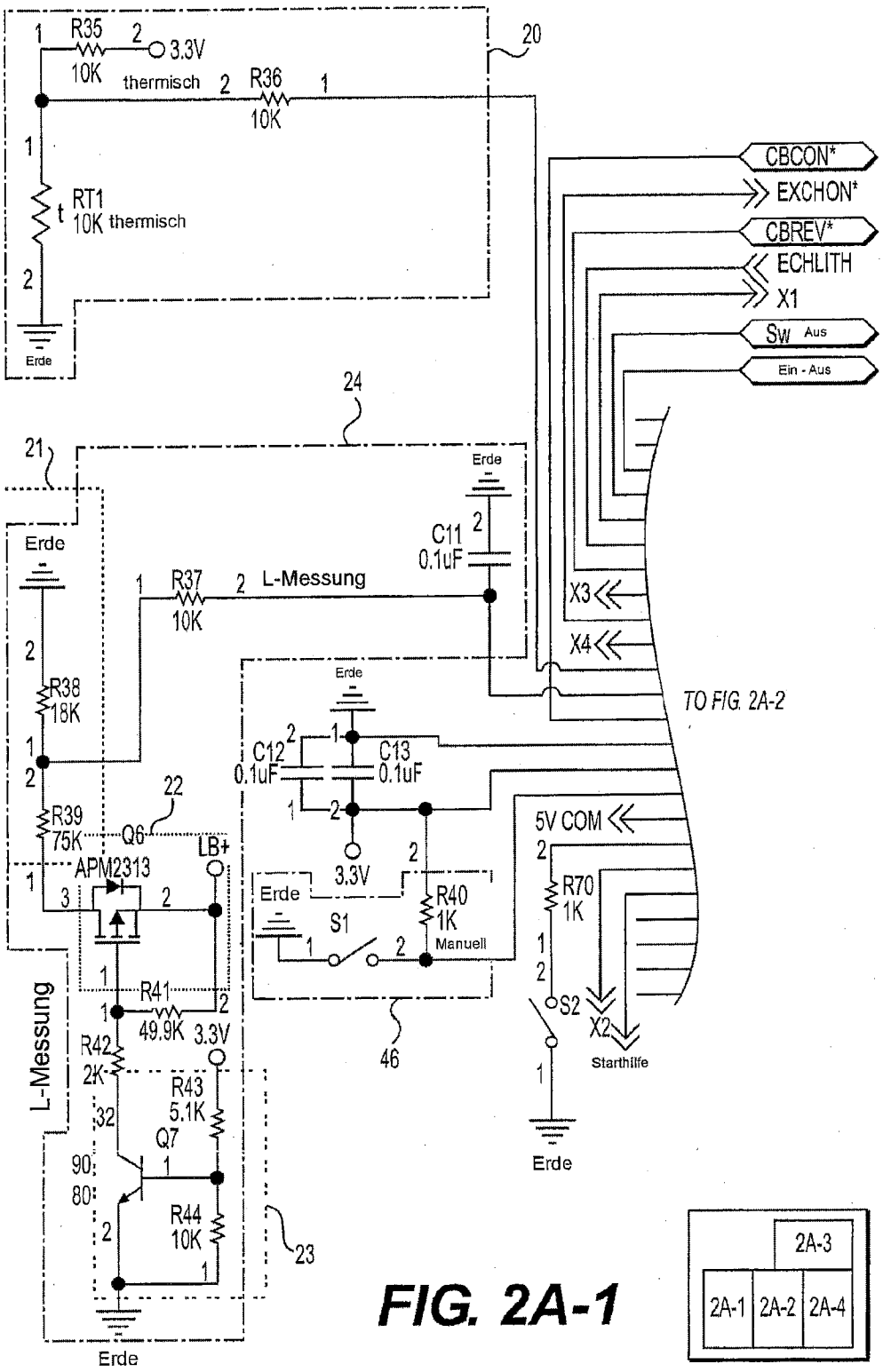
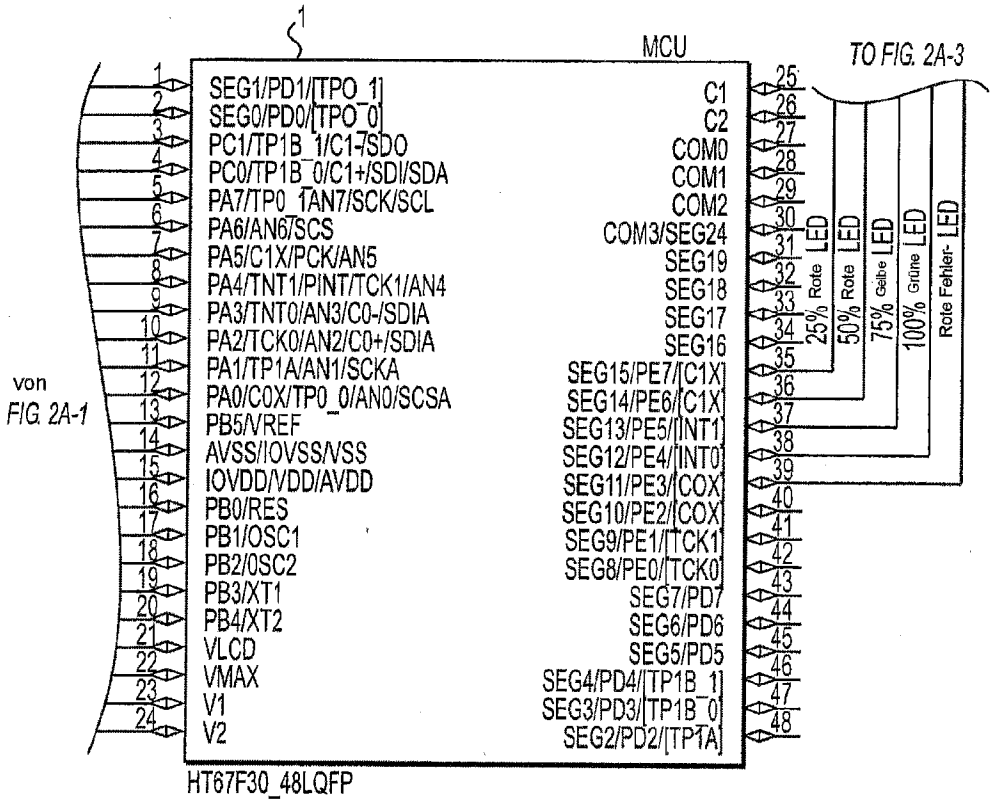
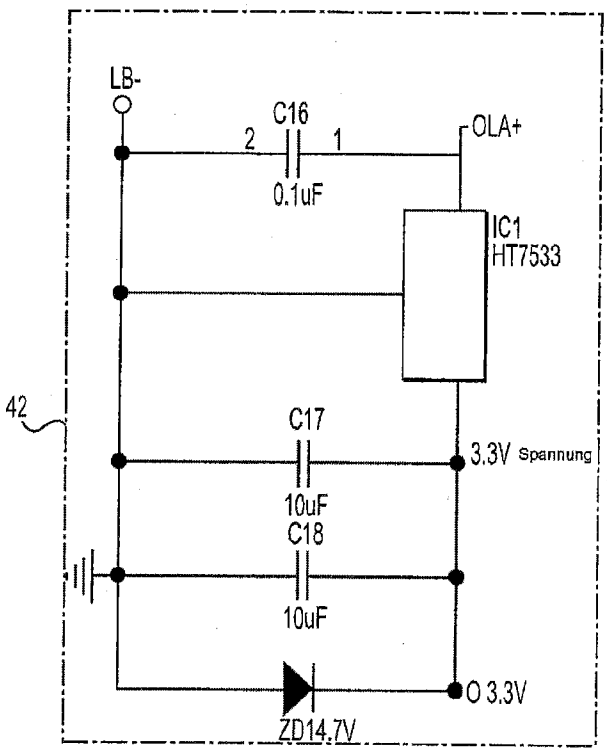


FIG. 2A-1

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1
MCU
TO FIG. 2A-3
von
FIG. 2A-1
SEG1/PD1/[TPO_1]
SEG0/PD0/[TPO_0]
PC1/TP1B_1/C1-/SDO
PC0/TP1B_0/C1+/SDI/SDA
PA7/TP0_1AN7/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/OSC2
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% Rote LED
50% Rote LED
75% Gelbe LED
100% Grüne LED
Rote Fehler- LED
HT67F30_48LQFP


LB-
C16
0.1uF
OLA+
IC1
HT7533
42
C17
10uF
3.3V Spannung
C18
10uF
3.3V
ZD14.7V

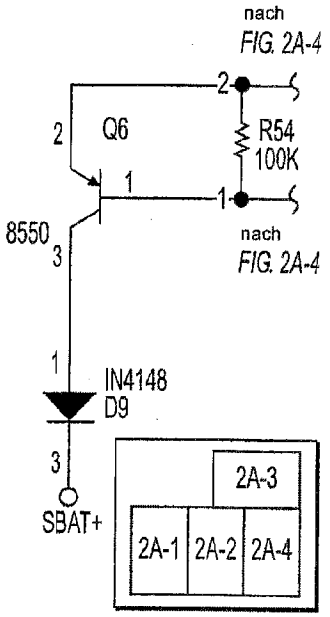

nach
FIG. 2A-4
Q6
R54
100K
8550
nach
FIG. 2A-4
IN4148
D9
SBAT+
2A-3
2A-1
2A-2
2A-4

FIG. 2A-2

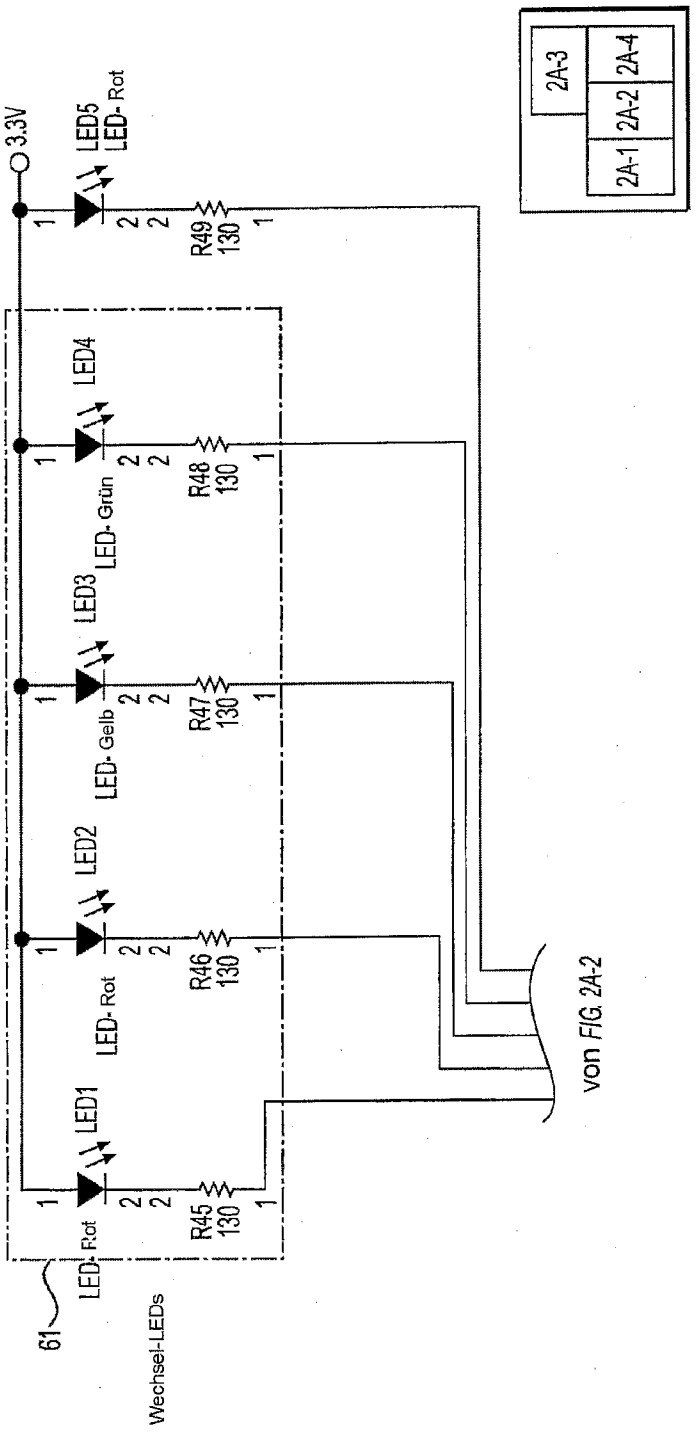

2A-3
2A-1
2A-2
2A-4
3.3V
LED5
LED- Rot
R49
130
LED4
LED- Grün
R48
130
LED3
LED- Gelb
R47
130
LED2
LED- Rot
R46
130
LED1
LED- Rot
R45
130
von FIG 2A-2
61
Wechsel-LEDs

FIG. 2A-3

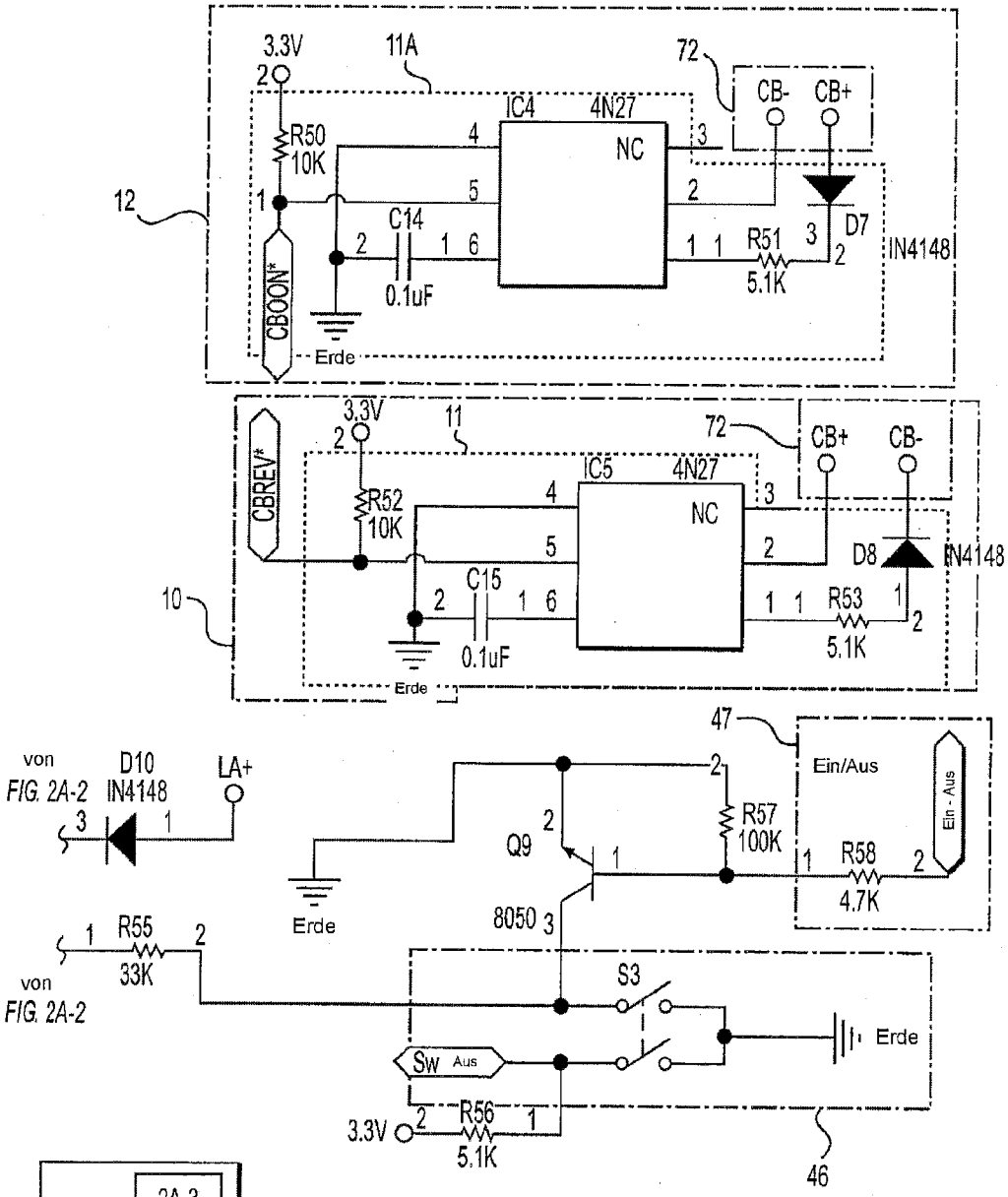

3.3V
11A
72
CB-
CB+
IC4
4N27
NC
R50
10K
12
C14
0.1uF
CBOON*
Erde
R51
5.1K
D7
IN4148
CBREV*
11
IC5
R52
10K
C15
0.1uF
D8
R53
5.1K
10
von
FIG. 2A-2
D10
IN4148
LA+
47
Ein/Aus
Ein - Aus
R57
100K
Q9
8050
R58
4.7K
R55
33K
S3
Sw Aus
R56
5.1K
46
2A-3
2A-1
2A-2
2A-4

FIG. 2A-4

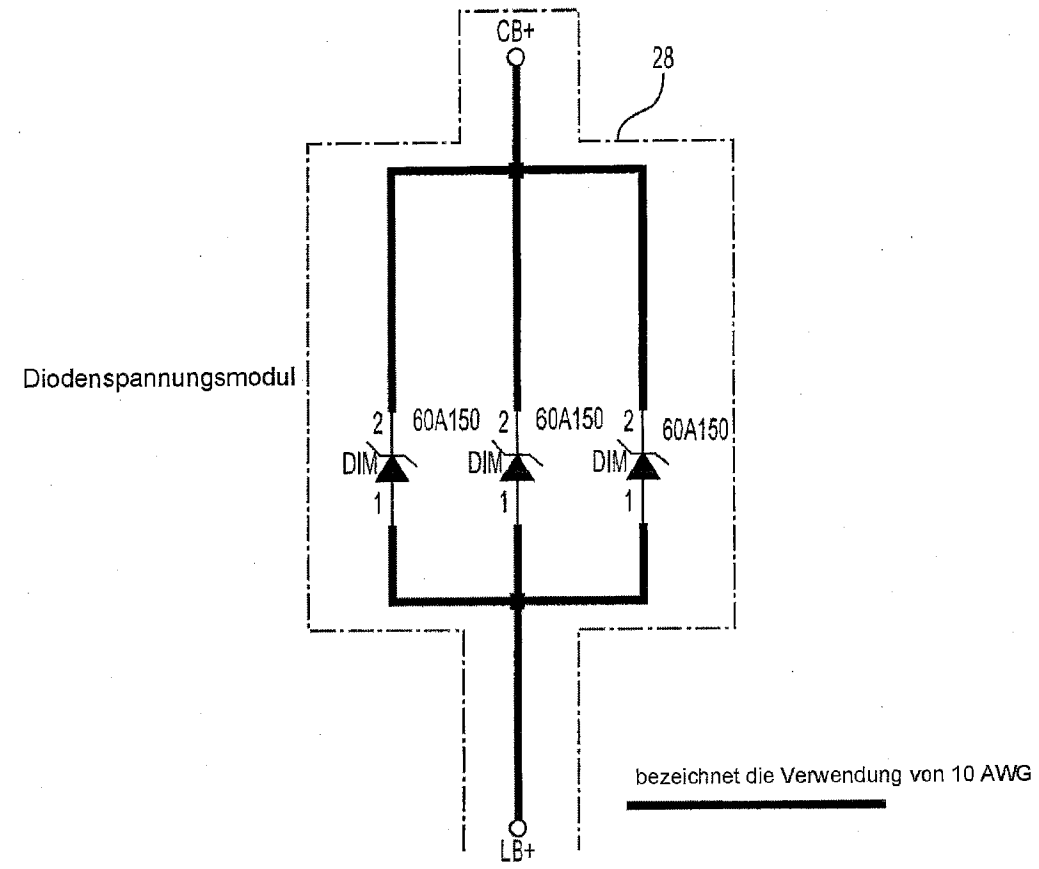
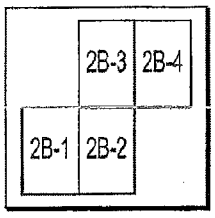

CB+
28
Diodenspannungsmodul
2
60A150
2
60A150
2
60A150
DIM
DIM
DIM
1
1
1
bezeichnet die Verwendung von 10 AWG
LB+

FIG. 2B-1


2B-3
2B-4
2B-1
2B-2

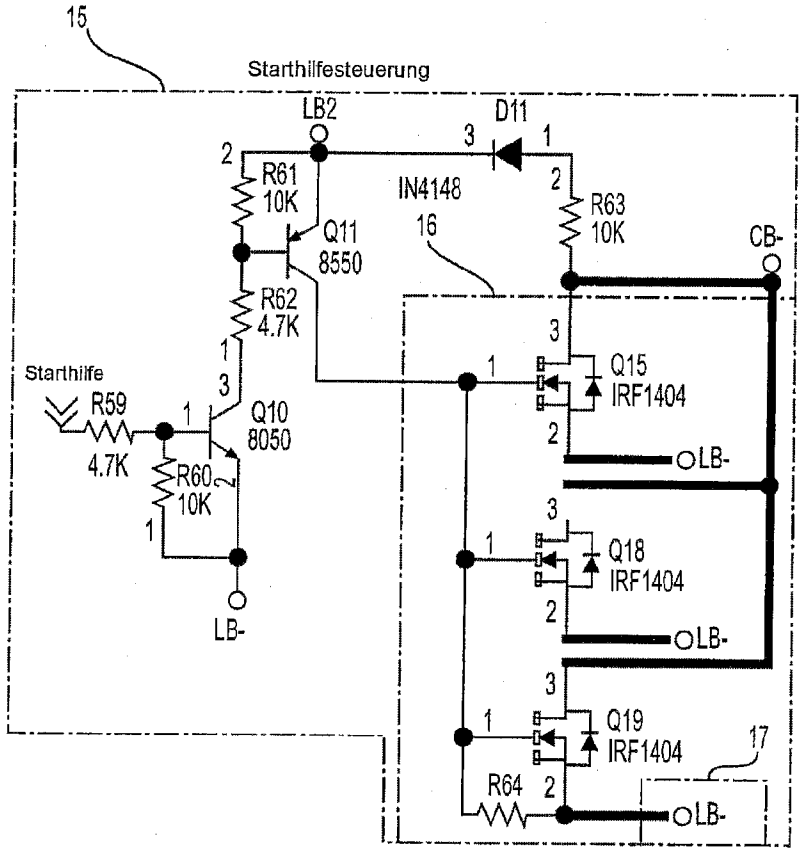
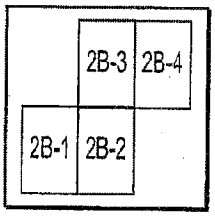

15
Starthilfesteuerung
LB2
D11
IN4148
R61
10K
Q11
8550
R62
4.7K
R63
10K
16
CB-
Starthilfe
R59
4.7K
Q10
8050
R60
10K
LB-
Q15
IRF1404
LB-
Q18
IRF1404
LB-
Q19
IRF1404
17
R64
LB-

FIG. 2B-2


2B-3
2B-4
2B-1
2B-2

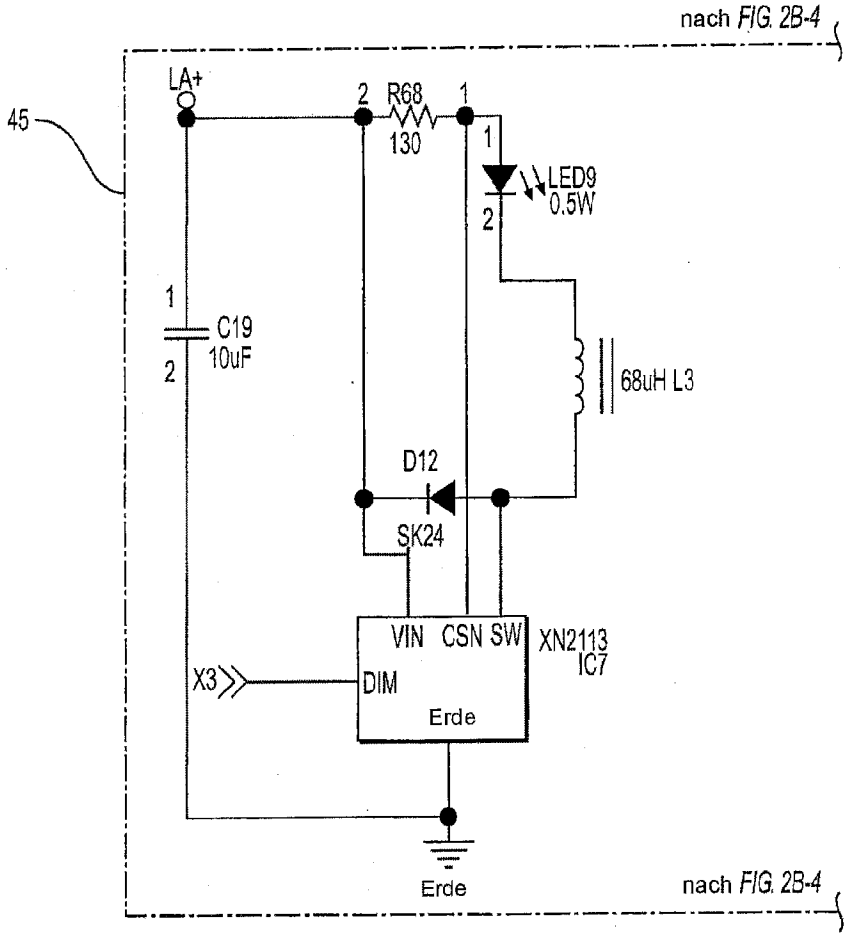
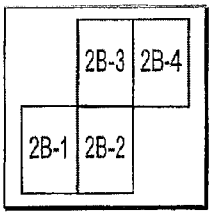


FIG. 2B-3



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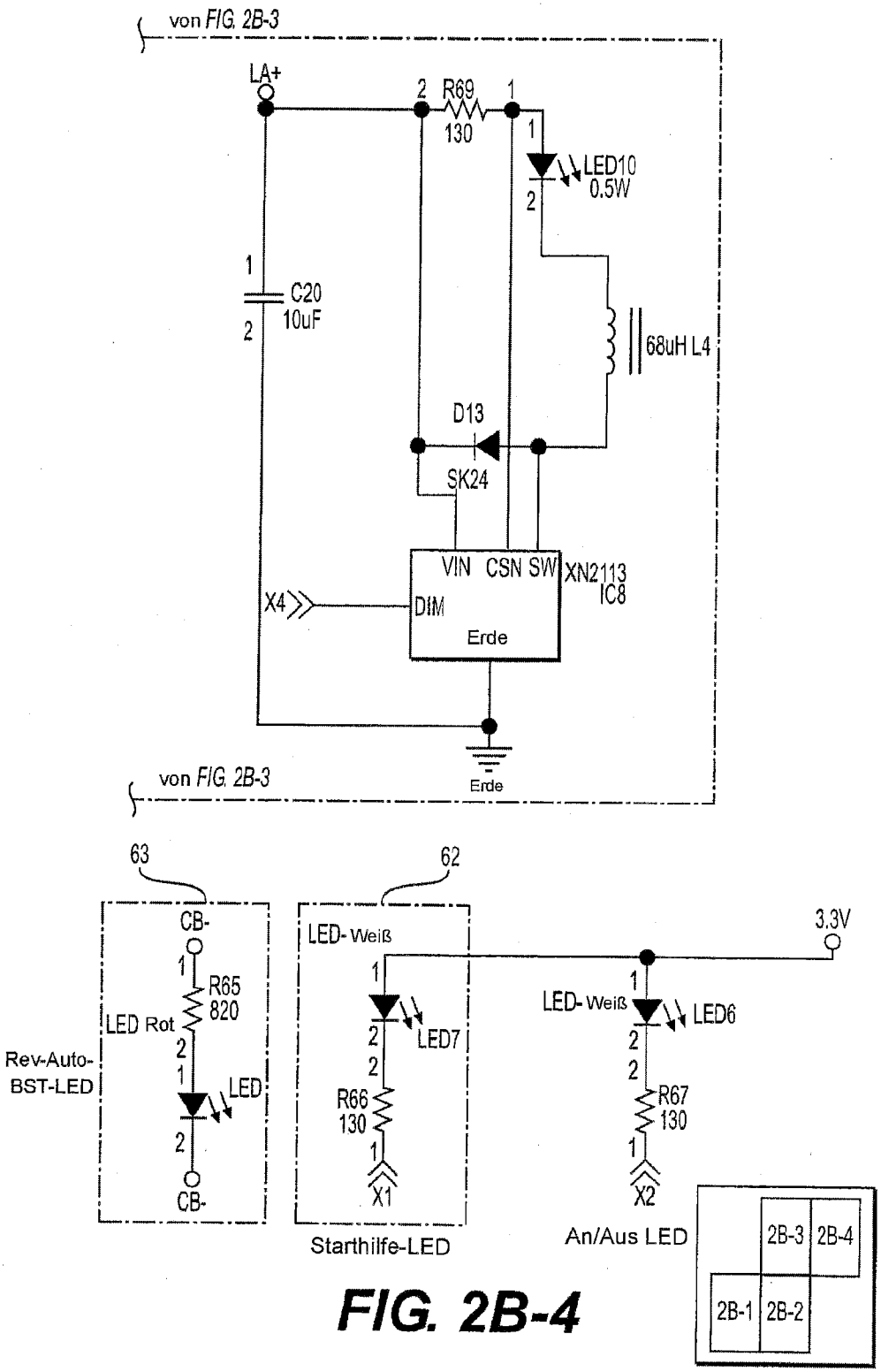

von FIG. 2B-3
LA+
2 R69 1
130
1
LED10
0.5W
2
1
C20
10uF
2
68uH L4
D13
SK24
VIN CSN SW
XN2113
IC8
X4
DIM
Erde
Erde
von FIG. 2B-3
63
62
CB-
1
R65
820
LED Rot
2
1
LED
2
CB-
Rev-Auto-
BST-LED
LED- Weiß
1
2
LED7
2
R66
130
1
X1
Starthilfe-LED
3.3V
1
LED- Weiß
LED6
2
2
R67
130
1
X2
An/Aus LED
2B-3
2B-4
2B-1
2B-2

FIG. 2B-4

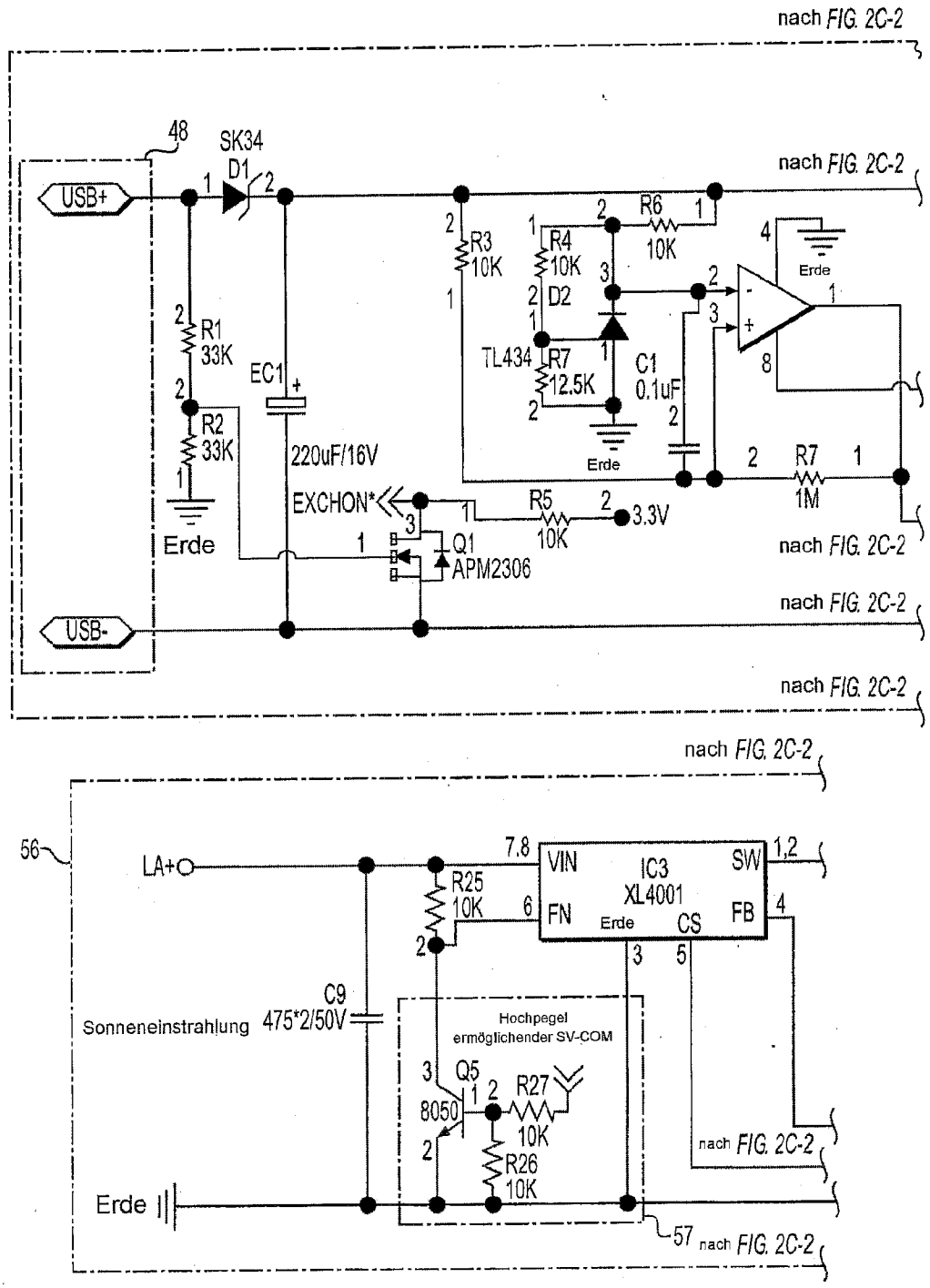
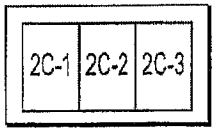


FIG. 2C-1



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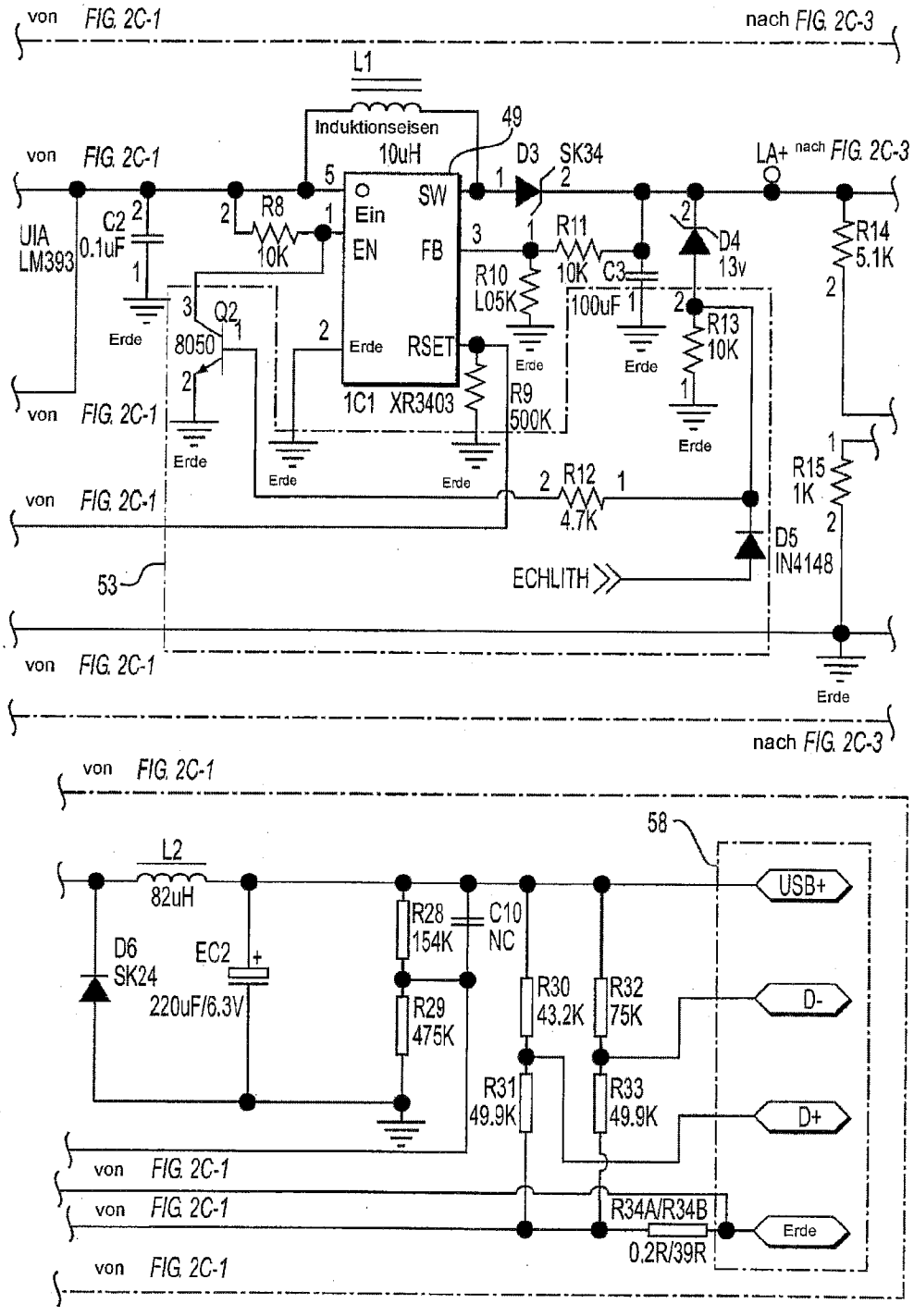
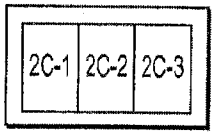
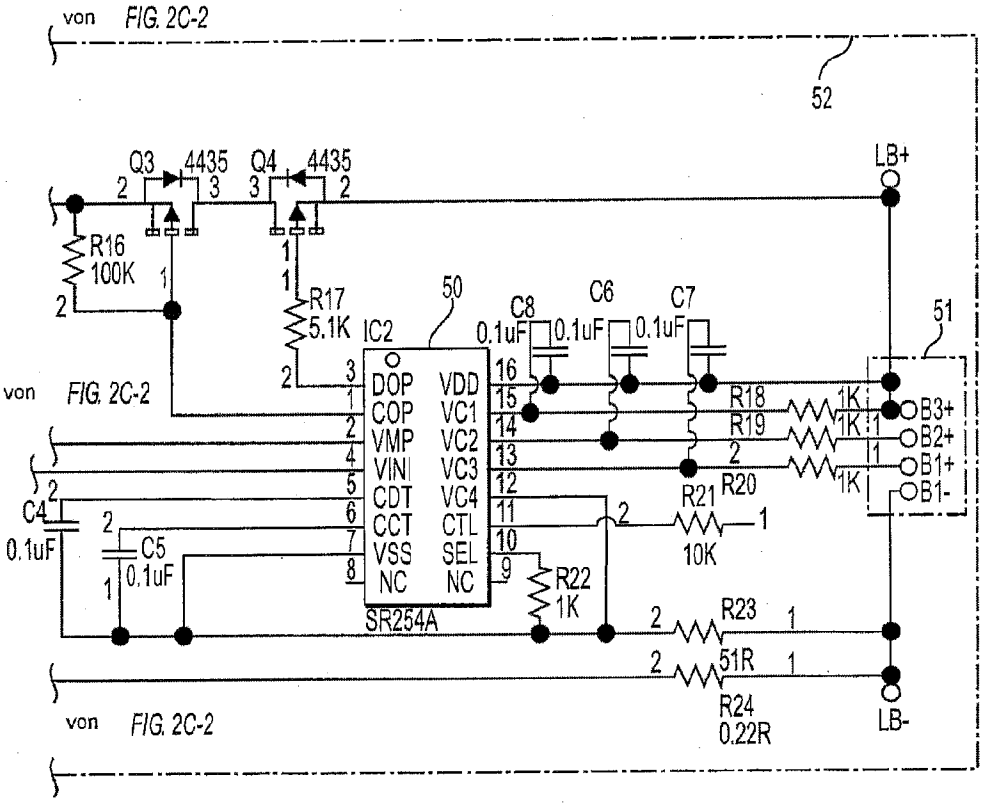

von FIG. 2C-1
nach FIG. 2C-3
L1
Induktionseisen
10uH
49
D3 SK34
LA+
UIA
LM393
C2
0.1uF
R8
10K
SW
Ein
EN
FB
R10
L05K
R11
10K
C3
100uF
D4
13v
R14
5.1K
Q2
8050
Erde
RSET
1C1 XR3403
R9
500K
R13
10K
R12
4.7K
R15
1K
D5
IN4148
53
ECHLITH
L2
82uH
D6
SK24
EC2
220uF/6.3V
R28
154K
C10
NC
R29
475K
R30
43.2K
R32
75K
R31
49.9K
R33
49.9K
58
USB+
D-
D+
R34A/R34B
0.2R/39R

FIG. 2C-2


2C-1
2C-2
2C-3



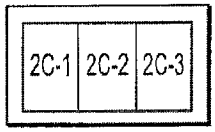


FIG. 2C-3

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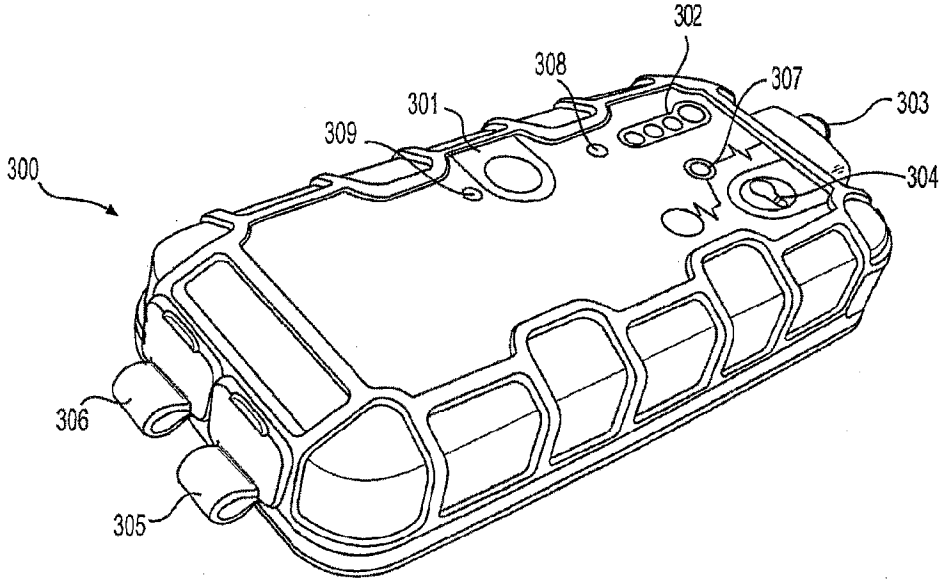

302
308
307
303
301
309
300
304
306
305

FIG. 3

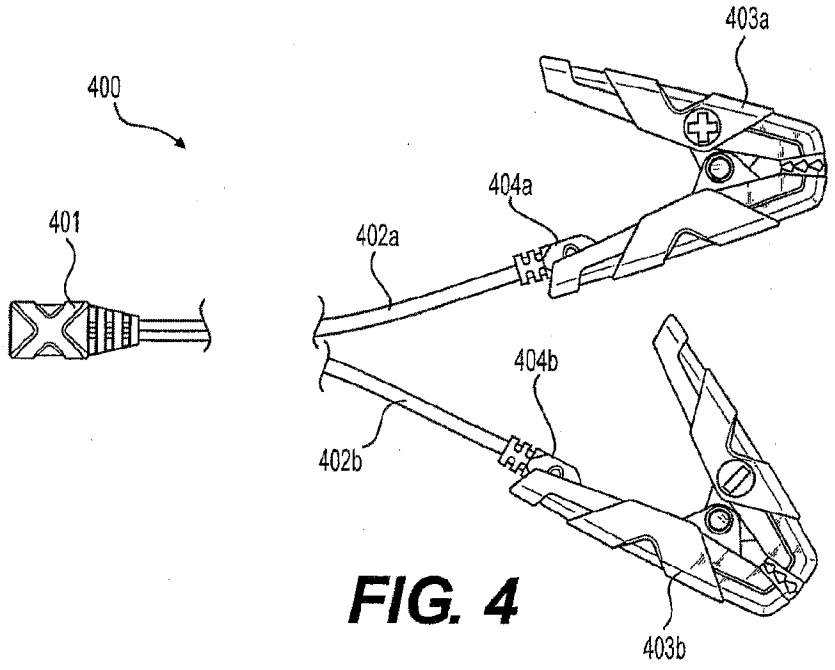

403a
400
404a
401
402a
404b
402b
403b

FIG. 4

TER MEER STEINMEISTER & PARTNER PATENTANWÄLTE mbB

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Deutsche Gebrauchsmusteranmeldung Nr. 20 2014 011 347.5
Anmelder: The NOCO Company
Unser Zeichen: 054985.000055.DEGM

05.09.2019
Ri/di
riemann@termeer.de

Unter Bezugnahme auf den Formalbescheid in oben genannter Angelegenheit, eingegangen am 16. August 2019.

Hiermit werden die noch fehlenden Schutzansprüche nachgereicht.

Jörg Riemann
Patentanwalt

Anlagen
Schutzansprüche 1 bis 31

SCHUTZANSPRÜCHE

1. Vorrichtung zur Starthilfe eines Fahrzeugmotors, umfassend:

eine interne Spannungsversorgung (32);

einen Ausgangsanschluss (303) mit positiv und negativ gepolten Ausgängen (CB-, CB+);

einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Ausgängen (CB-, CB+) in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;

einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Ausgängen (CB-, CB+) verbunden ist, und zur Detektion der Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;

und zur Bereitstellung eines Ausgangssignals konfiguriert ist, das anzeigt ob die positiven und negativen Anschlüsse der Fahrzeugbatterie (72), richtig an die positiv und negativ gepolten Ausgänge des Ausgangsanschluss (303) angeschlossen sind,

einen Spannungs-Schalter (15), der zwischen der internen Spannungsversorgung (32) und dem Ausgangsanschluss (305) angeschlossen ist; und

einen Mikrocontroller (1), der zum Empfangen von Eingabesignalen vom Fahrzeugbatterie-Isolationssensor (12) und vom Verpolungssensor (10) und zum Bereitstellen eines Ausgabesignals an den Spannungs-Schalter (15) konfiguriert ist, so dass der Spannungs-Schalter (15) als Antwort auf Signale der Sensoren, die das Vorhandensein einer Fahrzeugbatterie (72) am Ausgangsanschluss (303) und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie (72) mit positiv und negativ gepolten Ausgängen (CB-, CB+) anzeigen, eingeschaltet wird, um die interne Spannungsversorgung (32) mit dem Ausgangsanschluss (303) zu verbinden, und wobei der Spannungs-Schalter (15) nicht eingeschaltet wird, wenn Signale von den Sensoren, entweder das Fehlen einer Fahrzeugbatterie (72) am Ausgangsanschluss (303) oder eine ungeeignete Polverbindung der positiven und negativen Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Ausgängen (CB-, CB+) anzeigen.

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2. Vorrichtung zur Starthilfe eines Fahrzeugs mit einer erschöpften oder entladenen Fahrzeugbatterie (72) mit positiv und negativ gepolten Anschlüssen; umfassend:

eine Spannungsversorgung (32);

einen positiv gepolten Fahrzeugbatterieanschlussverbinder (CB+);

einen negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-);

einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) in einer Schaltung verbunden ist, wobei der Fahrzeugbatterie-Isolationssensor (12) eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) zu detektieren, wenn diese zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;

einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden ist,

wobei der Verpolungssensor (10) eingerichtet ist eine Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist, zu detektieren und ein Ausgabesignal bereitzustellen, welches anzeigt, dass die positiv und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) richtig mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden sind,

einen Spannungs-Schalter (15), der zwischen der Spannungsversorgung (32) und den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;

einen Mikrocontroller (1), der eingerichtet ist Eingabesignale vom Fahrzeugbatterie -Isolationssensor (12) und vom Verpolungssensor (10) zu empfangen, und den Betrieb des Spannungs-Schalters (15) zu steuern,

wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) einzuschalten, wenn Eingabesignale vom Fahrzeugbatterie-Isolationssensor (12) und vom Verpolungssensor (10) empfangen werden, die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüssen der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen,

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wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) auszuschalten, wenn Eingabesignale von den Sensoren (12, 10) empfangen werden, die sowohl ein Nichtvorhandensein der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) und/oder eine nicht korrekte Polaritätsverbindung der positiv und negativ gepolten Anschlüssen der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen.

3. Vorrichtung zur Starthilfe eines Fahrzeugs mit einer erschöpften oder entladenen Fahrzeugbatterie (72) mit positiv und negativ gepolten Anschlüssen; umfassend:

eine Spannungsversorgung (32);

einen positiv gepolten Fahrzeugbatterieanschlussverbinder (CB+);

einen negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-);

einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) in einer Schaltung verbunden ist, wobei der Fahrzeugbatterie-Isolationssensor (12) eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) zu detektieren, wenn diese zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;

einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden ist,

wobei der Verpolungssensor (10) eingerichtet ist eine Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist, zu detektieren und ein Ausgabesignal bereitzustellen, welches anzeigt, dass die positiv und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) richtig mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden sind,

einen Spannungs-Schalter (15), der zwischen der Spannungsversorgung (32) und den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;

einen Mikrocontroller (1), der eingerichtet ist Eingabesignale vom Fahrzeugbatterie -Isolationssensor (12) und vom Verpolungssensor (10) zu empfangen,

wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) einzuschalten, um die Spannungsversorgung (32) mit den positiv und negativ gepolten

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Fahrzeugbatterieanschlussverbindern (CB+) zu verbinden, als Antwort auf ein gleichzeitiges Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen,

wobei der Mikrocontroller (1) eingerichtet ist, den Spannungs-Schalter (15) auszuschalten, um zu eine Verbindung der Spannungsversorgung (32) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB+) zu verhindern, als Antwort auf ein nicht gleichzeitiges Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen.

4. Vorrichtung zur Starthilfe eines Fahrzeugs mit einer erschöpften oder entladenen Fahrzeugbatterie (72) mit positiv und negativ gepolten Anschlüssen; umfassend:

eine Spannungsversorgung (32);

einen positiv gepolten Fahrzeugbatterieanschlussverbinder (CB+);

einen negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-);

einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) in einer Schaltung verbunden ist,

wobei der Fahrzeugbatterie-Isolationssensor (12) eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) zu detektieren, wenn diese zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;

einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden ist,

wobei der Verpolungssensor (10) eingerichtet ist eine Polarität der Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist, zu detektieren und ein Ausgabesignal bereitzustellen, welches anzeigt, dass die positiv und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) richtig mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbunden sind,

einen Spannungs-Schalter (15), der zwischen der Spannungsversorgung (32) und den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) angeschlossen ist;

einen Mikrocontroller (1), der eingerichtet ist Eingabesignale vom Fahrzeugbatterie -Isolationssensor (12) und vom Verpolungssensor (10) zu empfangen,

wobei der Mikrocontroller (1) eingerichtet ist, ein aktivierendes Ausgabesignal bereitzustellen, um den Spannungs-Schalter (15) einzuschalten, um den Spannungsversorgung (32) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB+) zu verbinden, als Antwort auf ein gleichzeitiges Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die sowohl das Vorhandensein und die Verbindung der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) als auch die richtige Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen,

wobei der Mikrocontroller (1) eingerichtet ist, ein deaktivierendes Ausgabesignal bereitzustellen, um den Spannungs-Schalter (15) auszuschalten, um zu eine Verbindung der Spannungsversorgung (32) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB+) zu unterbrechen, als Antwort auf ein Empfangen von Eingabesignalen am Mikrocontroller (1) von den Sensoren (10, 12), die ein Nichtvorhandensein der mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) verbundenen Fahrzeugbatterie (72) und/oder eine nicht korrekte Polaritätsverbindung der positiven und negativ gepolten Anschlüsse der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzeigen.

5. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei der Fahrzeug-Isolationssensor (12) ein separater Isolationssensor (12) ist, der eingerichtet ist ein Vorhandensein der Fahrzeugbatterie (72) mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) anzuzeigen.

6. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei der Fahrzeug-Isolationssensor (12) ein Vorhandensein oder ein Fehlen der Fahrzeugbatterie (72) vor jeder anfänglichen Verbindung detektiert und nicht auf einer vorab gebildeten Verbindung oder Betrieb der Schaltung mit den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+).

7. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) eine positive Polaritätsbatterieklemme und eine negative Polaritätsbatterieklemme aufweisen.

8. Die Vorrichtung gemäß einem der vorhergehenden Ansprüche, wobei die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) eine positive Polaritätsbatterieklemme umfassen, die mit dem positiven Polaritäts-Batteriekabel verbunden ist und eine negative Polaritätsbatterieklemme umfassen, die mit dem negativen Polaritäts-Batteriekabel verbunden ist

9. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, weiter umfassend einen Ausgangsanschluss (303) mit den positiv und negativ gepolten Ausgängen, wobei der Ausgangsanschluss (303) eingerichtet ist, mit einem einzelnen entfernbaren Stecker verbunden zu werden, wobei der einzelne Stecker mit den positiven und negativen Kabeln verbunden ist.

10. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, wobei die interne Spannungsversorgung (32) eine Lithiumionenbatterie umfasst.

11. Die Vorrichtung gemäß Anspruch 10, wobei die Lithiumionenbatterie eine Batterieeinheit aus mehreren Lithiumionenbatterien umfasst.

12. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, wobei der Spannungs-Schalter (15) eine Vielzahl von FETs in Parallelschaltung (16) umfasst.

13. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, wobei der Fahrzeug-Isolationssensor (12) und der Verpolungssensor (10) optisch gekoppelte Isolationsphototransistoren umfassen.

14. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Vielzahl von Spannungsdioden (28), die zwischen die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) und die Spannungsversorgung (32) gekoppelt sind, um eine Rückaufladung der Spannungsversorgung (32) durch ein an die positiv und negativ gepolten Fahrzeugbatterieanschlussverbinder (CB-, CB+) angeschlossenes elektrisches System zu verhindern.

15. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend einen Temperatursensor (20) zur Detektion der Temperatur der Spannungsversorgung (32) und zum Bereitstellen eines Temperatursignals an den Mikrocontroller (1).

16. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Spannungsmessungsschaltung (24), die zur Messung der Ausgabespannung der Spannungsversorgung (32) und zum Bereitstellen eines Spannungsmessungssignals an den Mikrocontroller (1) konfiguriert ist.

17. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend ein Spannungsregler (42), der zur Umwandlung der Ausgabespannung der Spannungsversorgung (32) in einen Spannungspegel konfiguriert ist, der geeignet ist, um internen Komponenten der Vorrichtung eine Betriebsspannung bereitzustellen.

18. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend einen USB-Ausgangsanschluss (56), der zum Bereitstellen einer Ladungsspannung der internen Spannungsversorgung (32) an eine USB-ladbare Vorrichtung konfiguriert ist.

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19. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend einen USB-Ladeanschluss (52), der zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die Spannungsversorgung (32) konfiguriert ist.

20. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Blitzlicht-Schaltung (36, 45), die zum Bereitstellen einer Lichtquelle für einen Nutzer konfiguriert ist.

21. Die Vorrichtung gemäß Anspruch 20, wobei die Lichtquelle mindestens eine LED ist.

22. Die Vorrichtung gemäß Anspruch 20, wobei der Mikrocontroller (1) zur Steuerung der mindestens einen LED konfiguriert ist, um einen visuellen Alarm zur Anzeige einer Notsituation bereitzustellen.

23. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine Vielzahl von visuellen Anzeigen (61), die zur Anzeige des verbleibenden Kapazitätszustands der Spannungsversorgung (32) konfiguriert sind.

24. Die Vorrichtung gemäß Anspruch 23, wobei die Vielzahl von visuellen Anzeigen (61) eine Vielzahl von LEDs umfassen, die Licht verschiedener Farben ausgeben.

25. Die Vorrichtung gemäß einem der vorangehenden Ansprüche, ferner umfassend eine visuelle Anzeige (63), die zur Warnung eines Benutzers konfiguriert ist, wenn eine Fahrzeugbatterie (72) verpolt angeschlossen ist.

26. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend getrennte visuelle Anzeigen (62), die zur Anzeige des Spannung-An-Status der Vorrichtung und zur Anzeige des Status der Starthilfespannung der den positiv und negativ gepolten Fahrzeugbatterieanschlussverbindern (CB-, CB+) bereitgestellten Spannung konfiguriert ist.

27. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen manuelle Starthilfeschalter, der zum Aktivieren eines manuellen

Starthilfemodus konfiguriert ist, der es einem Benutzer ermöglicht, die Starthilfespannung mit der Fahrzeugbatterie (72) zu verbinden, wenn der Fahrzeugbatterie-Isolationssensor (12) das Vorhandensein einer Fahrzeugbatterie nicht detektieren kann.

28. Die Vorrichtung gemäß Anspruch 27, wobei der Mikrocontroller (1) zur Detektion der Aktivierung der manuellen Starthilfeschaltung für mindestens eine vorbestimmte Zeitdauer vor dem Aktivieren des manuellen Starthilfemodus konfiguriert ist.

29. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend eine Starthilfekabelvorrichtung (400), die einen Stecker (401) zum Einstecken in den Ausgangsanschluss und ein Paar Batteriekabel (402a, 402b) umfasst, an deren einem entsprechenden Ende der Stecker (401) integriert ist und die zum Anschließen an die Anschlüsse einer Fahrzeugbatterie (72) an dessen jeweiligem anderen Ende konfiguriert sind.

30. Die Vorrichtung gemäß Anspruch 29, wobei das Starthilfekabel ferner ein Paar von Ringanschlüssen (404a, 404b) umfasst, die zum jeweiligen Verbinden des Batteriekabelpaars (402a, 402b) an dessen anderem Ende mit einem Ende eines positiven oder negativen Batterieanschlusses oder einer positiven oder negativen Batterieanschlussklemme konfiguriert sind.

31. Die Vorrichtung gemäß irgendeinem der Ansprüche 29 oder 30, wobei der Ausgangsanschluss (303) und der Stecker (401) so dimensioniert sind, dass der Stecker (401) nur in einer bestimmten Orientierung in den Ausgangsanschluss (303) passt.

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Bitte Aktenzeichen und Anmelder/Inhaber bei allen Eingaben und Zahlungen angeben!

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In der vorliegenden Gebrauchsmusteranmeldung wurde festgestellt, dass die Abzweigungserklärung wirksam ist.

Das Eintragungsverfahren wird deshalb mit dem Anmeldetag 15.10.2014 fortgesetzt.

Wegen der Änderung des Anmeldetages musste auch ein neues Aktenzeichen vergeben werden.

Das neue Aktenzeichen lautet

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Das ursprünglich vergebene Aktenzeichen 20 2019 104 345.8 wurde gelöscht.

Bitte verwenden Sie in dieser Anmeldung nur noch das neue Aktenzeichen.

Gebrauchsmusterstelle

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Sehr geehrter Herr Patentanwalt,

die Anmeldung ist in formaler Hinsicht zu beanstanden:

Bisher wurden keine Schutzansprüche eingereicht.

In den Schutzansprüchen muss angegeben werden, welche Merkmale als neu unter Schutz gestellt werden sollen.

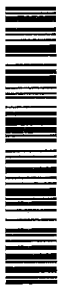
In § 5 der Gebrauchsmusterverordnung sind die Erfordernisse nachzulesen, die bei der Abfassung von Schutzansprüchen unbedingt zu beachten sind.

Als Formulierungshilfe kann Ihnen auch das Musterbeispiel im Merkblatt für Gebrauchsmusteranmelder dienen.

In den Schutzansprüchen dürfen nur Merkmale genannt werden, die auch schon in den ursprünglichen Unterlagen enthalten waren, - eine technische Erweiterung ist nicht zulässig und führt zur Zurückweisung der Anmeldung.

Bitte erledigen Sie die in diesem Bescheid enthaltenen Beanstandungen innerhalb eines Monats.

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Empfangsbestätigung für eine Gebrauchsmusteranmeldung

Die aus der beiliegenden Antragskopie ersichtliche Gebrauchsmusteranmeldung ist am 07.08.2019 beim Deutschen Patent- und Markenamt eingegangen.
Die Anmeldung hat das **Aktenzeichen 20 2019 104 345.8** erhalten.

Eingegangene Unterlagen:

12 Seite(n) mit Beschreibung
0 Seite(n) Schutzansprüche mit 0 Schutzansprüchen
13 Blatt Zeichnung(en)
0 Abschrift(en) der Voranmeldung(en)
☒ Abschrift der Voranmeldung bei Abzweigung
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Wichtige Hinweise:

Wird die Anmelde- oder Rechercheantragsgebühr nicht innerhalb von 3 Monaten nach Einreichung der Anmeldung bzw. nach Stellung des Antrags gezahlt, so gilt die Anmeldung bzw. der Rechercheantrag als zurückgenommen (§ 6 PatKostG). Bitte beachten Sie, dass außer der Empfangsbestätigung keine weitere Gebührenbenachrichtigung versandt wird.
Auf der nächsten Seite befinden sich weitere Informationen zu den Gebühren sowie Zahlungshinweise.

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Zugang Papier Anlage(n)

ADC EX1002
IPR2025-00885

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Gebührensätze

Anmeldegebühr	40,-- EUR (Gebührennummer 321 100)
Recherchegebühr	250,-- EUR (Gebührennummer 321 200)

Bei jeder Zahlung ist das vollständige **Aktenzeichen**, die genaue Bezeichnung des **Anmelders** und der **Verwendungszweck in Form der Gebührennummer** (s. unten) in deutlicher Schrift anzugeben.

Die **Recherchegebühr** verfällt mit Zahlung; eine Erstattung der Gebühr findet daher auch dann nicht statt, wenn die Recherche z.B. wegen Zurücknahme oder Zurückweisung der Anmeldung abgebrochen werden muss. Es wird daher empfohlen, den Rechercheantrag erst dann zu stellen, wenn feststeht, dass der Eintragung keine Hindernisse im Wege stehen.

Zahlungshinweise

1. Die Zahlung der Gebühr bestimmt sich nach der Patentkostenzahlungsverordnung (PatKostZV).
   Danach können Gebühren wie folgt entrichtet werden:

   a) durch Barzahlung bei den Geldstellen des Deutschen Patent- und Markenamts in München, in Jena und im Technischen Informationszentrum in Berlin,

   b) durch Überweisung auf das auf der ersten Seite dieses Schreibens angegebene Konto der Bundeskasse Halle für das Deutsche Patent- und Markenamt,

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2. Bei jeder Zahlung sind das vollständige **Aktenzeichen**, die genaue Bezeichnung des **Anmelders (Inhabers)** und die **Gebührennummern** in deutlicher Schrift anzugeben. Die Gebührennummern ergeben sich aus dem Gebührenverzeichnis des Patentkostengesetzes (PatKostG), das auch im Kostenmerkblatt A 9510 des Deutschen Patent- und Markenamts abgedruckt ist.
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3. Als **Einzahlungstag** gilt gemäß § 2 PatKostZV

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   b) bei Überweisung der Tag, an dem der Betrag auf dem Konto der Bundeskasse Halle für das Deutsche Patent- und Markenamt gutgeschrieben wird,

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Nymphenburger Straße 4

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Antrag auf Eintragung eines Gebrauchsmusters

2

Datum TT 07 MM 08 JJJJ 2019

(2) Zeichen des Anmelders/Vertreters (max. 20 Stellen): 054985.000055.DEGM
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The NOCO Company

Straße, Hausnummer (kein Postfach!)
30339 Diamond Parkway # 102

Postleitzahl 44139 **Ort** Glenwillow **Land** US

Telefon **Fax** **E-Mail**

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Bezeichnung der Erfindung

IPC-Vorschlag des Anmelders

Tragbare Starthilfevorrichtung für Fahrzeugbatterien mit Sicherheitsschutzvorrichtung

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(8) **Erklärungen**

	Aktenzeichen	Anmeldetag		
☐ **Teilung/Ausscheidung** aus der Gebrauchsmusteranmeldung				
☒ **Abzweigung** aus der Patentanmeldung/dem Patent	102014114997.1	15	10	2014

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(11) **Anlagen**

1. 12 Seite(n) Beschreibung
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   _____ Anzahl Schutzansprüche
3. 4 Anzahl Figuren
4. _____ Abschrift(en) der Voranmeldung(en) bei Priorität
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8. _____ Sonstiges

G6003e 1.08

Unterzeichner (1)

Jörg Riemann

(12) Unterschrift

Patentanwalt

(13) Funktion des Unterzeichners

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gültig bis:	01.04.2024 01:59:59
Eigentümer:	CN=Joerg Riemann 19236
Seriennummer:	434965933226548784616656071547439986 62
Herausgeber:	O=European Patent Office, CN=European Patent Office CA G2

Daten zum vorliegenden Vorgang:	
amtliches Aktenzeichen:	20 2019 104 345.8 (vorläufiges Akt)
Barcode:	20 2019 104 345.8
Vorgangstyp:	Gebrauchsmusteranmeldung
Bezeichnung der Erfindung:	Tragbare Starthilfevorrichtung für Fahrzeugbatterien mit Sicherheitsschutzvorrichtung
Ihr Zeichen:	054985.000055.DEGM
Anmelder:	The NOCO Company 30339 Diamond Parkway # 102 44139 Glenwillow US

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Von:	CN=Ter Meer Steinmeister & Partner Patent Attorneys mbB,C=de,O=Ter Meer Steinmeister & Partner Patent Attorneys mbB,OU=IT,E=sysop@termeer.de
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2

Datum TT 07 MM 08 JJJJ 2019

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(3) Der Empfänger in Feld (1) ist der

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Postleitzahl 44139 **Ort** Glenwillow **Land** US

Telefon **Fax** **E-Mail**

☐ Der Anmelder ist eingetragen im Handelsregister Nr.

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Vertreter (1)

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Tragbare Starthilfevorrichtung für Fahrzeugbatterien mit Sicherheitsschutzvorrichtung ✓ ~~DPMAdirekt G6003 e Seite 2~~

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(8) **Erklärungen**

	Aktenzeichen	Anmeldetag		
☐ **Teilung/Ausscheidung** aus der Gebrauchsmusteranmeldung				
☒ **Abzweigung** aus der Patentanmeldung/dem Patent	102014114997.1	15	10	2014
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☐ Inländische Priorität
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☐ Ausstellungspriorität
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(10) **Gebührenzahlung** in Höhe von 30,00 ✓ EUR

☒ **SEPA-Mandatsverwendung**
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☐ **Überweisung** *(nach Erhalt der Empfangsbescheinigung)*

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2.		Seite(n) Schutzansprüche
		Anzahl Schutzansprüche
3.	4	Anzahl Figuren
4.		Abschrift(en) der Voranmeldung(en) bei Priorität
5.	1	Abschrift der Voranmeldung bei Abzweigung
6.		Vertretervollmacht
7.		Übersetzung(en)
8.		Sonstiges

G6003e 1.08

Unterzeichner (1)

Jörg Riemann
(12) Unterschrift

Patentanwalt
(13) Funktion des Unterzeichners

Deutsches
Patent- und Markenamt

Angaben zum Verwendungszweck des Mandats

A9532 9.13 1e

mit der Referenznummer:

ZUEV82050007471717102013

Kontaktdaten des Mandatgebers für Rückfragen

Name, Vorname TER MEER STEINMEISTER & PARTNER mbB
Straße, Hausnummer, Postfach Nymphenburger Straße 4
Postleitzahl, Ort, Land 80335 München, DE
Telefon / Telefax / E-Mail 089 72 98 960-0 089 72 98 960-20

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Bitte beachten Sie bei Angaben zu mehreren Aktenzeichen unsere Hinweise zu Sammel-Zahlungen.			
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054985.000055.DEGM			
Name des Schutzrechtsinhabers: The NOCO Company			
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Aktenzeichen:

☐ Das Mandat mit der o.g. Mandatsreferenznummer wird vollständig widerrufen

07.08.2019
Datum

elektronisch signiert
Unterschrift

Tragbare Starthilfevorrichtung für Fahrzeugbatterien mit Sicherheitsschutzvorrichtung

Hintergrund der Erfindung

Die vorliegende Erfindung bezieht sich im Allgemeinen auf eine Starthilfevorrichtung für ein Fahrzeug, das eine verbrauchte oder entladene Batterie aufweist. Gemäß dem Stand der Technik sind Vorrichtungen bekannt, die entweder ein Paar von elektrischen Verbindungskabeln aufweisen, die eine vollständig aufgeladene Batterie eines anderen Fahrzeugs mit der Fahrzeugstartschaltung des Fahrzeugs verbinden, das die erschöpfte Batterie enthält, oder tragbare Starthilfevorrichtungen, die eine vollständig geladene Batterie aufweisen , und die mit der Startvorrichtung des Fahrzeugmotors über ein Kabelpaar in einer Schaltung verbunden werden können.

Probleme entstanden beim Stand der Technik, wenn entweder die Drahtbrückenanschlüsse oder -klemmen der Kabel irrtümlich miteinander in Kontakt gebracht wurden, während die anderen Enden an eine geladenen Batterie angeschlossen waren, oder wenn die positiven und negativen Anschlüsse mit den Anschlüssen entgegengesetzter Polung im zu überbrückenden Fahrzeug verbunden wurden, wodurch ein Kurzschluss verursacht wurde, der zu einer Funkenbildung und einer potentiellen Beschädigung der Batterien und/oder einem körperlichen Schaden führte.

Gemäß dem Stand der Technik wurden unterschiedliche Versuche zur Beseitigung dieser Probleme unternommen. US 6,212,054, erteilt am 3. April 2001, offenbart eine Batteriestarthilfeeinheit, die empfindlich auf die Polung reagiert und passende oder unpassende Verbindungen detektieren kann, bevor ein Pfad für den elektrischen Ladungsfluss bereitgestellt wird. Die Vorrichtung verwendet einen Satz von LEDs, die mit durch eine Steuerschaltung ausgerichteten optischen Kopplern verbunden sind. Die Steuerschaltung steuert eine Spulenanordnung, die den Pfad eines Leistungsstroms steuert. Der Steuerschaltkreis lässt einen Leistungsstromfluss durch die Spulenanordnung nur dann zu, wenn die Kontaktpunkte der Starthilfekabelklemmenverbindungen richtig angelegt wurden.

US 6,632,103, erteilt am 14. Oktober 2003, offenbart ein adaptives Starthilfekabel, das durch zwei Klemmenpaare verbunden ist, wobei die beiden Klemmenpaare jeweils an zwei Batterien angeschlossen sind, um Strom von einer Batterie zu einer anderen Batterie zu übertragen. Das adaptive Starthilfekabel enthält eine mit jeder Klemme verbundene Polungsdetektionseinheit, eine Schalteinheit und eine Stromdetektionseinheit, die beide zwischen den beiden Klemmenpaaren vorhanden sind. Nachdem die Polung jeder Klemme durch die Polungsdetektionseinheit abgetastet wurde, erzeugt die Schalteinheit eine geeignete Verbindung zwischen den beiden Batterien. Daher sind die positiven und negativen Anschlüsse der beiden Batterien basierend auf dem detektierten Ergebnis der Polungsdetektionseinheit passend verbunden.

US 8,493,021, erteilt am 23. Juli 2013, offenbart eine Vorrichtung, die die Spannung einer Fahrzeugbatterie, welche Starthilfe bekommt und den durch die Starthilfebatterien gelieferte Strom überwacht, um zu bestimmen, ob eine passende Verbindung hergestellt wurde und um eine Fehlerüberwachung bereitzustellen. Nur wenn die geeignete Polung detektiert wird, kann das Sys-

tem betrieben werden. Die Spannung wird überwacht, um einen offenen Stromkreis, getrennte leitende Klemmen, Nebenschlusskabelfehler und Spulenfehlerzustände zu erfassen. Der Strom durch das Nebenschlusskabel wird überwacht, um das Bestehen eines Batterieexplosionsrisikos und eines einen Überhitzungszustand darstellenden Überschussstromzustands zu erkennen, der zu einem Feuer führen kann. Das System enthält eine interne Batterie zum Bereitstellen der Spannung für die Batterie des Fahrzeugs, das Starthilfe bekommen soll. Sobald das Fahrzeug gestartet ist, findet eine automatische elektrische Trennung der Einheit von der Fahrzeugbatterie statt.

US 5,189,359, erteilt am 23. Februar 1993, offenbart eine Starthilfekabelvorrichtung, die zwei Brückengleichrichter zum Ausbilden einer Referenzspannung, einen Dekodierer mit vier Eingängen zum Erkennen, welche Anschlüsse verbunden werden sollen, basierend auf einem Vergleich der Spannung an jedem der vier Anschlüsse mit der Referenzspannung, und ein Relaispaar aufweist, zum Bewirken der passenden Verbindung in Abhängigkeit von der Erkennung durch den Dekodierer. Es wird keine Verbindung hergestellt, es sei denn, dass nur ein Anschluss einer jeden Batterie eine höhere Spannung als die Referenzspannung aufweist, so dass „positive" Anschlüsse angezeigt werden, und ein Anschluss eine geringere Spannung als die Referenzspannung aufweist, so dass „negative" Anschlüsse angezeigt werden, und dass deshalb die beiden Hochspannungsanschlüsse und die beiden Niedrigspannungsanschlüsse verbunden werden können. Der Strom fließt, sobald die entsprechende Relaisvorrichtung geschlossen wird. Die Relaisvorrichtung ist vorzugsweise eine Metall-Oxid-Halbleiter-Feldeffekttransistor (MOSFET), der mit einer Serienanordnung von Photodioden, die ein MOSFET-gate-Schließ-Potential entwickeln, wenn der Dekodierer-Ausgang eine LED zum Leuchten bewirkt.

US 5,795,182, erteilt am 18. August 1998, offenbart einen polungsunabhängigen Satz von Batteriestarthilfekabeln, um eine erste Batterie mit einer zweiten Batterie zu überbrücken. Die Vorrichtung weist einen Detektor der relativen Polung auf, um zu detektieren, ob zwei Batterien über Kreuz oder parallel angeordnet sind. Ein Drei-Punkt-Hochspannungskapazitätsquerriegeldrehschalter reagiert auf den Detektor der relativen Polung zum automatischen Verbinden des Plus-Anschlusses der beiden Batterien miteinander und der Minus-Anschlüsse der beiden Batterien miteinander, ungeachtet dessen, ob die detektierte Anordnung über Kreuz oder parallel ist, und ein Unterstrom-Detektor und eine Verzögerungsschaltung zum Zurücksetzen der Vorrichtung in ihren Anfangs- und nicht angeschlossenen Zustand, nachdem die Vorrichtung von einer der Batterien getrennt wurde. Der Querriegeldrehschalter weist zwei Kontaktpaare und einen Dreharm auf, der sich um zwei getrennte Punkte dreht, um vollen elektrischen Kontakt zwischen den Kontaktpaaren zu sichern. Die Erfindung kann auch verwendet werden, um eine Batterieladevorrichtung herzustellen, die mit einer Batterie ungeachtet der Batteriepolung verbunden werden kann.

US 6,262,492, erteilt am 17. Juli 2001, offenbart ein Autobatteriestarterkabel zur passenden Kopplung einer effektiven Spannungsquelle an eine fehlerhafte oder ungeladene Batterie, die eine Relaisschaltungsstromkreis aufweist, welcher mit der Spannungsquelle und der Batterie durch zwei Stromleitungspaare verbunden ist. Erste und zweite Spannungspolungserkennungsschaltungen wer-

den jeweils mit der Spannungsquelle und der Batterie durch ein entsprechendes Spannungsleitungspaar verbunden, um die Polung der Spannungsquelle und der Batterie zu erkennen. Eine Logikerkennungsschaltung erzeugt ein Steuersignal, das abhängig von der Polung der Spannungsquelle und der Batterie ist, und eine Treiberschaltung, die durch ein Steuersignal des Logikerkennungsschaltung gesteuert wird, steuert den Relaisschaltungsstromkreis an, so dass das genaue Koppeln der beiden Pole der Spannungsquelle an die beiden Pole der Batterie ermöglicht wird.

US 5,635,817, erteilt am 3. Juni 1997, offenbart eine Fahrzeugbatterie-Ladevorrichtung, die ein Steuergehäuse aufweist, das Kabel enthält und, die eine Strombegrenzungsvorrichtung zum Verhindern des Überschreitens eines vorbestimmten maximalen Ladestroms von ungefähr 40 bis 60 A enthält. Das Steuergehäuse weist eine Polungsdetektionsvorrichtung zur Überprüfung der passenden Polung der Verbindung der Anschlüsse der beiden Batterien und zur elektrischen Trennung der beiden Batterien im Falle des Vorliegens einer falschen Polung auf.

US 8,199,024, erteilt am 12. Juni 2012, offenbart eine Sicherheitsschaltung in einem Niedrigspannungsverbindungssystem, das die beiden Niedrigspannungssysteme getrennt lässt, bis es bestimmt, dass es sicher ist, eine Verbindung aufzubauen. Wenn die Sicherheitsschaltung bestimmt, dass keine unsicheren Bedingungen vorliegen, und dass es sicher ist, die beiden Niedrigspannungssysteme zu verbinden, kann die Sicherheitsschaltung die beiden Niedrigspannungssysteme durch einen „sanften Start" verbinden, der eine Verbindung zwischen den beiden Systemen über eine Zeitdauer bereitstellt, die induzierte Spannungsspitzen auf einem oder mehreren der Niedrigspannungssysteme reduziert oder verhindert. Wenn in einem der Niedrigspannungssysteme eine vollständig entladene Batterie eingebaut ist, wird ein Verfahren für die Detektion der passenden Polung der Verbindungen zwischen den Niedrigspannungssystemen verwendet. Die Bestimmung der Polung der entladenen Batterie erfolgt durch das Durchschicken von einem oder mehreren Testströmen durch die entladene Batterie und durch die Bestimmung, ob ein entsprechender Spannungsanstieg beobachtet wird.

US 5,793,185, erteilt am 11. August 1998, offenbart eine tragbare Starthilfevorrichtung, die Steuerkomponenten und Schaltungen zur Verhinderung von Überladung und falscher Verbindung von Batterien aufweist.

Während der Stand der Technik Lösungen für die obengenannten Probleme, wie oben diskutiert, vorschlägt, leidet jede der Lösungen des Stands der Technik an anderen Defiziten, entweder in Bezug auf Komplexität, Kosten oder die Anfälligkeit für Fehlfunktionen. Folglich existiert ein Bedarf in diesem technischen Gebiet nach weiteren Verbesserungen für Starthilfevorrichtungen von Fahrzeugen.

Zusammenfassung der Erfindung

Gemäß einem Aspekt der Erfindung, wird eine Vorrichtung zur Starthilfe eines Fahrzeugmotors bereitgestellt, die Folgendes aufweist: eine interne Spannungsversorgung; einen positiv und negativ gepolte Ausgänge aufweisenden Ausgangsanschluss; einen Fahrzeugbatterie-Isolationssensor, der mit den positiv und negativ gepolten Ausgängen in einer Schaltung verbunden ist und zur Detektion

des Vorhandenseins einer Fahrzeugbatterie konfiguriert ist, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist; einen Verpolungssensor, der in einer Schaltung mit den positiv und negativ gepolten Ausgängen verbunden ist und zur Detektion der Polarität einer Fahrzeugbatterie konfiguriert ist, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist; einen Spannungs-FET-Schalter, der zwischen der internen Spannungsversorgung und dem Ausgangsanschluss angeschlossen ist; und ein Mikrocontroller, der zum Empfangen von Eingabesignalen vom Fahrzeug-Isolationssensor und Verpolungssensor und zum Bereitstellen eines Ausgabesignals an den Spannungs-FET-Schalter so konfiguriert ist, dass der Spannungs-FET-Schalter als Antwort auf Signale der Sensoren, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden.

Gemäß einem weiteren Aspekt der Erfindung, besteht die interne Spannungsversorgung aus einer wieder aufladbaren Lithiumionenbatterieeinheit.

Gemäß noch einem weiteren Aspekt der Erfindung, wird eine Starthilfekabelvorrichtung bereitgestellt, die einen Stecker aufweist, der zum Einstecken in einen Ausgangsanschluss einer tragbaren Vorrichtung zur Batterieladestarthilfe, die eine interne Spannungsversorgung aufweist, konfiguriert ist; ein Kabelpaar, an dessen jeweiligem einen Ende der Stecker integriert ist; wobei das Kabelpaar zum getrennten Anschließen an die Anschlüsse einer Batterie an dessen jeweiligem anderen Ende konfiguriert ist.

Kurze Beschreibung der Zeichnungen

Figur 1 stellt einen Funktionsplan einer tragbaren Vorrichtung zur Batteriestarthilfe von Fahrzeigen gemäß einem Aspekt der vorliegenden Erfindung dar;

Figuren 2A-2C stellen schematische Schaltpläne einer beispielhaften Ausführungsform einer tragbaren Vorrichtung zur Batteriestarthilfe von Fahrzeugen gemäß einem Aspekt der vorliegenden Erfindung dar;

Figur 3 stellt eine perspektivische Ansicht einer tragbaren Vorrichtung zur Starthilfe gemäß einer beispielhaften Ausführungsform der vorliegenden Erfindung dar; und

Figur 4 stellt eine Draufsicht eines Starthilfekabels dar, das mit der tragbaren Vorrichtung zur Starthilfe gemäß einem weiteren Aspekt der vorliegenden Erfindung verwendbar ist.

Detaillierte Beschreibung der Erfindung

Figur 1 stellt einen Funktionsplan einer tragbaren Vorrichtung zur Batteriestarthilfe gemäß einem Aspekt der vorliegenden Erfindung dar. Das Herzstück der tragbaren Vorrichtung zur Batteriestarthilfe ist eine Lithiumpolymerbatterieeinheit 32, die genügend Energie speichert, um einem Fahrzeugmotor Starthilfe zu leisten, welcher von einer konventionellen 12 Volt Bleisäure- oder von einer durch ein Ventil regulierten Bleisäure-Batterie beliefert wird. In einer beispielhaften Ausführungsform weist eine Überspannungslithiumpolymerbatterieeinheit drei 3,7 V, 2666 mAh Lithiumpolymerbatterien in einer 3S1P-Konfiguration auf. Die sich ergebende Batterieeinheit liefert 11,1 V,

2666 Ah (8000 Ah bei 3,7 V, 29,6 Wh). Ein kontinuierlicher Entladungsstrom beträgt 25 C (oder 200 A), und eine Entladungsstromspitze beträgt 50 C (oder 400 A). Der maximale Ladungsstrom der Batterieeinheit beträgt 8000 mA (8 A).

Eine programmierbare Mikrocontrollereinheit (MCU) 1 erhält verschiedene Eingaben und erzeugt Informations- als auch Steuerungsausgaben. Die programmierbare MCU 1 stellt ferner eine Flexibilität für das System bereit, in dem es Aktualisierungen der Funktionalität und der Systemparameter zulässt, ohne eine Änderung der Hardware zu benötigen. Gemäß einer beispielhaften Ausführungsform wird ein 8-bit-Mikrocontroller mit einem 2K x 15-bit-Flash-Speicher verwendet, um das System zu steuern. Ein solcher Mikrocontroller ist HT67F30, der kommerziell bei Holtek Semiconductors Inc. erhältlich ist.

Eine Autobatterie-Verpolungssensor 10 überwacht die Polung der Fahrzeugbatterie 72, wenn die tragbare Vorrichtung zur Batteriestarthilfe mit dem elektrischen System des Fahrzeugs verbunden wird. Wie unten erklärt, verhindert die Starthilfevorrichtung, dass die Lithiumbatterieeinheit mit der Fahrzeugbatterie 72 verbunden wird, wenn die Anschlüsse der Batterie 72 mit den falschen Anschlüssen der Starthilfevorrichtung verbunden sind. Ein Autobatterie-Isolationssensor 12 detektiert, ob ein eine Fahrzeugbatterie 72 mit der Starthilfevorrichtung verbunden ist oder nicht, und verhindert, dass die Lithiumbatterieeinheit mit den Ausgangsanschlüssen der Starthilfevorrichtung verbunden wird, es sei denn, dass eine gute (z.B. aufladbare) Batterie an die Ausgangsanschlüsse angeschlossen ist.

Ein smart-switch-FET-Schaltung 15 schaltet die Lithiumbatterie der tragbaren Vorrichtung zur Batteriestarthilfe elektrisch an das elektrische System des Fahrzeugs, nur wenn bestimmt wird, dass die Fahrzeugbatterie durch die MCU 1 als vorhanden erfasst wird (als Antwort auf ein von einem Isolationssensor 12 bereitgestelltes Detektionssignal) und mit der passenden Polung angeschlossen ist (als Antwort auf ein von einem Verpolungssensor 10 bereitgestelltes Detektionssignal). Ein Lithiumbatterie-Temperatursensor 20 überwacht die Temperatur der Lithiumbatterieeinheit 32, um eine Überhitzung aufgrund von hohen Umgebungstemperaturbedingungen und übermäßiger Stromaufnahme während des Starthilfevorgangs zu detektieren. Eine Lithiumbatterie-Spannungsmessungsschaltung 24 überwacht die Spannung der Lithiumbatterieeinheit 32, um das Spannungspotential daran zu hindern, während eines Ladevorgangs zu hoch zusteigen, und während eines Entladevorgangs zu tief zu fallen.

Lithiumbatterie-Rückladungsschutzdioden 28 verhindern, dass irgendein Ladungsstrom, der an die Fahrzeugbatterie 72 geliefert wird, vom elektrischen System des Fahrzeugs in die Lithiumbatterieeinheit 32 zurückfließt. Eine Blitzlicht-LED-Schaltung 36 wird bereitgestellt, um eine Blitzlicht-Funktion zur Verstärkung des Lichts unter der Fahrzeughaube bei dunklen Bedingungen zu liefern, sowie SOS- und Stroboskoplichtfunktionen aus Sicherheitsgründen bereitzustellen, wenn ein Fahrzeug an einem potentiell gefährlichen Ort fahruntauglich wird. Ein Spannungsregler 42 stellt eine Regulierung der internen Betriebsspannung für den Mikrocontroller und die Sensoren bereit. Ein manueller Modus- und Blitzlicht-Ein/Aus-Schalter 46 erlauben es dem Nutzer, das Einschalten der

tragbaren Vorrichtung zur Batterieladestarthilfe zu steuern, um den manuellen Starthilfebetrieb zu steuern, wenn das Fahrzeug keine Batterie aufweist, und die Blitzlichtfunktion zu steuern. Der manuelle Knopf funktioniert nur, wenn die Starthilfevorrichtung eingeschaltet ist. Dieser Knopf erlaubt es dem Nutzer, Fahrzeugen Starthilfe zu leisten, denen entweder eine Batterie fehlt, oder deren Batteriespannung so niedrig ist, dass eine automatische Detektion durch die MCU nicht möglich ist. Wenn der Nutzer den manuellen Starthilfeknopf drückt und für eine vorbestimmte Zeit (wie z.B. drei Sekunden) gedrückt hält, um eine ungewollte Betätigung des manuellen Modus zu verhindern, wird die Spannung der internen Lithiumionenbatterie auf den Fahrzeugbatterie-Verbindungsanschluss geschaltet. Die einzige Ausnahme zum manuellen Starthilfebetrieb erfolgt, wenn die Autobatterie verpolt wurde. Wenn die Autobatterie verpolt wurde, sollte die Spannung der internen Lithiumbatterie niemals auf den Fahrzeugbatterie-Verbindungsanschluss geschaltet werden.

Eine USB-Ladeschaltung 52 wandelt eine Spannung von irgendeiner der USB-Ladespannungsquellen um, so dass Spannung und Strom zum Laden der Lithiumbatterieeinheit 32 geladen werden. Ein USB-Ausgang 56 stellt eine tragbare USB-Ladevorrichtung zum Laden von Smartphones, Tablet-Computern (im Folgenden Tablet genannt) und weiteren wieder aufladbaren elektronischen Vorrichtungen bereit. LEDs zur Betriebszustandsanzeige 60 stellen eine visuelle Anzeige des Lithiumbatterie-Kapazitätsstatus sowie eine Anzeige des Aktivierungsstatus des smartswitchs dar (die anzeigt, dass dem elektrischen System eine Spannung bereitgestellt wird).

Ein detaillierter Betrieb der tragbaren Starthilfevorrichtung wird nun gemäß den schematischen Diagrammen der Figuren 2A bis 2C beschrieben werden. Wie in Figur 2A gezeigt, stellt die Mikrocontrollereinheit 1 das Zentrum aller Ein- und Ausgänge dar. Der Batterie-Verpolungssensor 10 umfasst einen optisch gekoppelten Isolationsphototransistor (4N27), der mit den Anschlüssen der Fahrzeugbatterie 72 an den Eingangspins 1 und 2 mit einer Diode D8 im Leiterdraht des Pins 1 (der am negativen Anschluss CB- angeschlossen ist), so dass, falls die Batterie 72 mit den Anschlüssen der Starthilfevorrichtung mit passender Polung verbunden ist, die LED des optischen Kopplers 11 keinen Strom leiten wird, und deshalb ausgeschaltet wird, wobei der MCU 1 eine „1“ oder ein hohes Ausgabesignal bereitgestellt wird. Der Autobatterie-Isolationssensor 12 umfasst einen optisch gekoppelten Isolationsphototransistor (4N27), der mit den Anschlüssen der Fahrzeugbatterie 72 an den Eingangspins 1 und 2 mit einer Diode D7 im Leitungsdraht des Pins 1 (angeschlossen an den positiven Anschluss CB+) verbunden ist, so dass, falls die Batterie 72 an die Anschlüsse der Starthilfevorrichtung mit der passenden Polung verbunden ist, die LED des optischen Kopplers 11A einen Strom leiten wird, und deshalb eingeschaltet wird, wobei der MCU eine „0“ oder ein niedriges Ausgabesignal bereitgestellt wird, und das Vorhandensein einer Batterie über die Starthilfeausgangsanschlüsse der tragbaren Starthilfevorrichtung anzeigt.

Falls die Autobatterie 72 mit der tragbaren Starthilfevorrichtung verpolt verbunden ist, wird die LED des optischen Kopplers 11 des Verpolungssensors 10 den Strom leiten, wobei der Mikrocontrollereinheit 1 eine „0“ oder ein niedriges Signal bereitgestellt wird. Ferner, falls keine Batterie mit

der tragbaren Starthilfevorrichtung verbunden ist, wird die LED des optischen Kopplers 11A des Isolationssensors 12 keinen Strom leiten und wird deshalb ausgeschaltet, wobei der MCU eine „1" oder ein hohes Ausgabesignal bereitgestellt wird, das die Abwesenheit irgendeiner mit der tragbaren Starthilfevorrichtung verbundener Batterie anzeigt. Unter Verwendung dieser spezifischen Eingaben kann die Mikrocontrollersoftware der MCU 1 bestimmen, wann es sicher ist, den smart-switch-FET 15 einzuschalten, wodurch die Lithiumbatterieeinheit mit den Starthilfeanschlüssen der Starthilfevorrichtung verbunden wird. Folglich kann die MCU 1 den smart-switch-FET-Schaltung 15 davor bewahren, eingeschaltet zu werden und somit das Erzeugen von Funken/Kurzschlüssen der Lithiumbatterieeinheit verhindert werden, wenn die Autobatterie 72 entweder überhaupt nicht mit der Starthilfevorrichtung verbunden ist oder verpolt verbunden ist.

Wie in Figur 2B gezeigt, wird der smart-switch-FET 15 durch eine Mikrocontrollerausgabe 1 angesteuert. Der FET-smart-switch 15 weist drei FETs (Q15, Q18 und Q19) in Parallelschaltung auf, die die Spannung der Lithiumbatterieeinheit auf die FETs verteilt. Wenn diese Mikrocontrollerausgabe in einen logisch niedrigen Zustand gesteuert wird, befinden sich die FETs 16 alle in einem Hochwiderstandszustand, weswegen kein Stromfluss vom negativen Kontakt 17 der internen Lithiumbatterie zum negativen Kontakt der Autobatterie 72 zugelassen wird. Wenn die Mikrocontrollerausgabe in einen logisch hohen Zustand gesteuert wird, sind die FETs 16 (Q15, Q18, Q19) in einem Niedrigwiderstandszustand, der einen freien Stromfluss vom negativen Kontakt 17 (LB-) der internen Lithiumbatterieeinheit zum negativen Kontakt (CB-) der Autobatterie 72 zulässt. Auf diese Art steuert die Mikrocontrollersoftware die Verbindung der internen Lithiumbatterieeinheit 32 mit der Fahrzeugbatterie 72, um dem Fahrzeugmotor Starthilfe zu leisten.

Gemäß Figur 2A, kann die Spannung der internen Lithiumbatterieeinheit unter Verwendung der Schaltung 24 und einem der Analog-zu-Digital-Eingänge des Mikrocontrollers 1 präzise gemessen werden. Die Schaltung 24 ist vorgesehen, um zu erfassen, wann die Spannung des Haupt-3,3 V-Reglers 42 eingeschaltet ist und den Transistor 23 einzuschalten, wenn die Spannung des Reglers 42 eingeschaltet ist. Wenn der Transistor 23 leitet, schaltet er den FET 22 ein, womit dem positiven Kontakt (LB+) der internen Lithiumbatterie ein leitender Pfad zu einem Spannungsteiler 21 bereitgestellt wird, der es zulässt, der Mikrocontroller einen niedrigeren Spannungsbereich zum Einlesen zuzuführen. Durch Verwendung dieser Eingabe kann die Mikrocontrollersoftware bestimmen, ob die Lithiumbatteriespannung während des Entladevorgangs zu niedrig oder während des Aufladevorgangs zu hoch ist, und sie kann eine entsprechende Maßnahme zur Verhinderung der Beschädigung der elektronischen Komponenten unternehmen.

Weiterhin kann gemäß Figur 2A durch zwei Vorrichtungen 20 mit negativem Temperaturkoeffizienten (NTC) die Temperatur der internen Lithiumbatterieeinheit 32 präzise gemessen werden. Dies sind Vorrichtungen, die ihren Widerstand verringern, wenn ihre Temperatur steigt. Die Schaltung stellt einen Spannungsteiler dar, der das Ergebnis den beiden Analog-zu Digital-(A/D)-Eingänge dem Mikrocontroller zuführt. Die Mikrocontrollersoftware kann dann bestimmen, wann

die interne Lithiumbatterie zu heiß ist, um einen Starthilfevorgang zuzulassen, wodurch der Aufbau Betriebssicherheit erhält.

Die Hauptspannungsreglersschaltung 42 ist so gestaltet, dass die Spannung der internen Lithiumbatterie in einen geregelten Wert von 3,3 V umgewandelt wird, der vom Mikrocontroller 1 sowie von anderen Komponenten der Starthilfevorrichtung für die interne Betriebsspannung verwendet wird. Drei Lithiumbatterie-Rückaufladungs-(back-charging)-Schutzdioden 28 (siehe Figur 2B) werden eingesetzt, um den Stromfluss nur von der internen Lithiumbatterieeinheit 32 zur Autobatterie 72 zuzulassen, und nicht von der Autobatterie zur internen Lithiumbatterie. Auf diese Art kann, falls das elektrische System des Autos von seiner Lichtmaschine geladen wird, die interne Lithiumbatterie nicht rückaufladen (und hierbei beschädigt werden), was eine weitere Stufe der Betriebssicherheit bereitstellt.

Der Hauptspannungseinschalter 46 (Figur 2A) ist eine Kombination, die einen Doppelpol- oder Zweiwegebetrieb zulässt, so dass das Produkt mit einem Drücken eingeschaltet werden kann, wenn es sich im Aus-Zustand befindet, oder ausgeschaltet werden kann, wenn es sich im Ein-Zustand befindet. Diese Schaltung verwendet auch einen Mikrocontrollerausgang 47, um die Spannung aufrecht zu erhalten, wenn die Schaltung durch den Ein-Schalter aktiviert wurde. Wenn der Schalter gedrückt wird, schiebt der Mikrocontroller diesen Ausgang auf eine Hochlogikstufe, um die Spannung „am Leben" zu erhalten, wenn der Schalter losgelassen wird. Auf diese Art behält der Mikrocontroller die Kontrolle, wenn die Spannung ausgeschaltet wird, wenn der Ein-/Aus-Schalter wieder aktiviert wird, oder wenn die Lithiumbatteriespannung zu niedrig wird. Die Mikrocontrollersoftware weist auch einen Zeitschalter auf, der die Spannung nach einer vorbestimmten Zeitdauer (wie z.B. 8 Stunden) bei Nichtverwendung ausschaltet.

Die Blitzlicht-LED-Schaltung 45, die in Figur 2B gezeigt wird, steuert den Betrieb der Blitzlicht-LEDs. Zwei Ausgänge des Mikrocontrollers 1 sind den beiden separaten LEDs zugeordnet. Daher können die LEDs zur Ausbildung von Stroboskopen und SOS-Mustern unabhängig softwaregesteuert werden, was der Starthilfevorrichtung noch ein weiteres Sicherheitsmerkmal hinzugefügt. LED-Anzeigen geben dem Betreiber die Rückmeldung, die dieser braucht, um zu verstehen, was mit dem Produkt passiert. Vier separate LEDs 61 (Figur 2A) werden durch entsprechende einzelne Ausgänge des Mikrocontrollers 1 gesteuert, um eine Anzeige der verbleibenden Kapazität der internen Lithiumbatterie bereitzustellen. Diese LEDs werden in einem Format vergleichbar dem einer „Kraftstoffanzeige" mit 25%-, 50%-, 75%- und 100%-(rot, rot, gelb, grün)-Kapazitätsanzeigen gesteuert. Eine LED-Anzeige 63 (Figur 2B) gibt dem Benutzer eine visuelle Warnung, wenn die Fahrzeugbatterie 72 verpolt angeschlossen worden ist. Starthilfe- und Ein-/Aus-LEDs 62 stellen jeweils visuelle Anzeigen bereit, wenn die Starthilfevorrichtung Starthilfespannung bereitstellt, und wenn die Starthilfevorrichtung eingeschaltet wird.

Eine USB-Ausgangsschaltung 56 (Figur 2C) weist einen USB-Ausgang auf, zum Laden von tragbaren elektronischen Vorrichtungen, wie z.B. Smartphones durch die interne Lithiumbatterieeinheit 32. Eine Steuerschaltung 57 des Mikrocontrollers 1 lässt es zu, den USB-Ausgang 56 durch die

Softwaresteuerung ein- oder auszuschalten, um zu verhindern, dass die interne Lithiumbatterie eine zu niedrige Kapazität erreicht. Die USB-Ausgabe wird mittels einer Standard-USB-Verbindung 58 an das Äußere der Vorrichtung geführt, wobei die Standard-USB-Verbindung 58 den erforderlichen Standardspannungsteiler aufweist, um es zu ermöglichen, Smartphones eine bestimmte Spannung zuzuführen, die sie benötigenden. .

Die USB-Ladeschaltung 52 lässt es zu, dass die interne Batterieeinheit 32 durch eine Standard-USB-Ladevorrichtung geladen wird. Dieser Spannungseingang verwendet eine Standard-Mikro-USB-Verbindung 48, die es erlaubt, Standardkabel zu verwenden. Das von der Standard-USB-Ladevorrichtung bereitgestellte Potential von 5 V wird in 12,4 V DC-Spannung hochgewandelt, das zum Laden der internen Lithiumbatterieeinheit unter Verwendung eines DC-DC-Konverters 49 benötigt wird. Der DC-DC-Konverter 49 kann durch die Schaltung 53 mittels eines Mikrocontrollerausgangs 1 ein- und ausgeschaltet werden.

Auf diese Art kann die Mikrocontrollersoftware den Ladevorgang ausschalten, falls die Batteriespannung durch den A/D-Eingang 22 als zu hoch bestimmt worden ist. Zusätzliche Betriebssicherheit wird zur Abhilfe der Beseitigung von Überladung der internen Lithiumbatterie durch Verwendung einer Lithiumbatterie-Ladesteuerung 50 bereitgestellt, die einen Ladungsausgleich der internen Lithiumbatteriezellen 51 bereitstellt. Diese Steuerung stellt auch eine redundante Betriebssicherheit zur Beseitigung von Überladung der internen Lithiumbatterie bereit.

Figur 3 stellt eine perspektivische Ansicht einer tragbaren Vorrichtung 300 gemäß einer beispielhaften Ausführungsform der Erfindung dar. 301 ist ein Spannungseinschalter. 302 zeigt die LED-„Kraftstoff"-Anzeigen 61. 303 zeigt einen 12 V-Ausgangsanschluss, der mit einer weiter unten beschriebenen Kabelvorrichtung 400 verbindbar ist. 304 zeigt einen Blitzlichtsteuerungsschalter zum Aktivieren der Blitzlicht-LEDs 45. 305 stellt einen USB-Eingangsanschluss zum Laden der internen Lithiumbatterie dar, und 306 ist ein USB-Ausgangsanschluss, um anderen tragbaren Vorrichtungen, wie z.B. Smartphones, Tablets, Musikspieler, usw., Ladung durch die Lithiumbatterie bereitzustellen. 307 stellt eine „Starthilfe-Ein"-Anzeige dar, die anzeigt, dass die Spannung dem 12 V-Ausgangsanschluss bereitgestellt wird. 308 stellt eine Verpolungsanzeige dar, die anzeigt, dass die Fahrzeugbatterie in Bezug auf die Polung falsch verbunden ist. 309 stellt eine „Spannung-Ein"-Anzeige dar, die anzeigt, dass die Vorrichtung für den Betrieb hochgefahren ist.

Figur 4 zeigt eine Starthilfekabelvorrichtung 400, die insbesondere für eine Verwendung mit der tragbaren Vorrichtung 300 ausgestaltet ist. Die Vorrichtung 400 weist einen Stecker 401 auf, der so gestaltet ist, dass er in den 12 V-Ausgangsanschluss 303 der tragbaren Vorrichtung 300 einsteckt werden kann. Der Stecker 401 ist in einem Kabelpaar 402a und 402b integriert, und die Kabel sind jeweils mit den Batterieanschlussklemmen 403a und 403b mittels Ringanschlüssen 404a und 404b verbunden. Der Anschluss 303 und der Stecker 401 können so dimensioniert werden, dass der Stecker 401 nur in den Anschluss 303 in einer bestimmten Orientierung passt, wodurch gesichert ist, dass die Klemme 403a einer positiven Polung entsprechen wird, und die Klemme 403b einer negativen Polung entsprechen wird, wie darauf angegeben. Zusätzlich können die Ringanschlüsse 404a

und 404b von den Klemmen getrennt werden und direkt mit den Anschlüssen der Fahrzeugbatterie verbunden werden. Dieses Merkmal kann nützlich sein, um beispielsweise die Kabel 402a bis 402b dauerhaft mit der Fahrzeugbatterie zu verbinden. Im Falle einer Erschöpfung der Batteriespannung könnte die tragbare Starthilfevorrichtung 300 durch Einstecken des Steckers 401 in den Anschluss 303 in sehr einfacher Weise passend mit der Batterie verbunden werden.

Die Erfindung, die auf diese Weise beschrieben wurde, wird dem Fachmann ersichtlich sein, so dass diese in vielen Arten variiert werden kann, ohne vom Umfang der Erfindung abzuweichen. Jede und alle solche Variationen werden innerhalb des Umfangs der folgenden Ansprüche erfasst.

Es folgen Ausführungsbeispiele:

1. Vorrichtung zur Starthilfe eines Fahrzeugmotors, umfassend: eine interne Spannungsversorgung (32); einen positiv und negativ gepolte Ausgänge (CB-, CB+) aufweisenden Ausgangsanschluss (303); einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Ausgängen (CB-, CB+) in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie (32), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist; einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Ausgängen (CB-, CB+) verbunden ist, und zur Detektion der Polarität einer Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist; ein Spannungs-FET-Schalter (15), der zwischen der internen Spannungsversorgung (32) und dem Ausgangsanschluss (305) angeschlossen ist; und ein Mikrocontroller (1), der zum Empfangen von Eingabesignalen vom Fahrzeug-Isolationssensor (12) und vom Verpolungssensor (10) und zum Bereitstellen eines Ausgabesignals an den Spannungs-FET-Schalter (15) so konfiguriert ist, dass der Spannungs-FET-Schalter (15) als Antwort auf Signale der Sensoren, die das Vorhandensein einer Fahrzeugbatterie (72) am Ausgangsanschluss (303) und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie (72) mit positiv und negativ gepolten Ausgängen (CB-, CB+) anzeigen, eingeschaltet wird, um die interne Spannungsversorgung (32) mit dem Ausgangsanschluss (303) zu verbinden.

2. Die Vorrichtung gemäß Beispiel 1, wobei die interne Spannungsversorgung (32) eine Lithiumionenbatterie umfasst.

3. Die Vorrichtung gemäß Beispiel 2, wobei die Lithiumionenbatterie eine Batterieeinheit aus mehreren Lithiumionenbatterien umfasst.

4. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, wobei der Spannungs-FET-Schalter (15) eine Vielzahl von FETs in Parallelschaltung (16) umfasst.

5. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, wobei der Fahrzeug-Isolationssensor (12) und der Verpolungssensor (10) optisch gekoppelte Isolationsphototransistoren umfassen.

6. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Vielzahl von Spannungsdioden (28), die zwischen den Ausgangsanschluss (303) und der internen Span-

nungsversorgung (32) gekoppelt sind, um eine Rückaufladung der internen Spannungsversorgung (32) durch ein an den Ausgangsanschluss (303) angeschlossenes elektrisches System zu verhindern.

7. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen Temperatursensor (20)zur Detektion der Temperatur der internen Spannungsversorgung (32) und zum Bereitstellen eines Temperatursignals an den Mikrocontroller (1).

8. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Spannungsmessungsschaltung (24), die zur Messung der Ausgabespannung der internen Spannungsversorgung (32) und zum Bereitstellen eines Spannungsmessungssignals an den Mikrocontroller (1) konfiguriert ist.

9. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend ein Spannungsregler (42), der zur Umwandlung der Ausgabespannung der internen Spannungsversorgung (32) in einen Spannungspegel konfiguriert ist, der geeignet ist, um internen Komponenten der Vorrichtung eine Betriebsspannung bereitzustellen.

10. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen USB-Ausgangsanschluss (56), der zum Bereitstellen einer Ladungsspannung der internen Spannungsversorgung (32) an eine USB-ladbare Vorrichtung konfiguriert ist.

11. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen USB-Ladeanschluss (52), der zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die interne Spannungsversorgung (32) konfiguriert ist.

12. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen Blitzlicht-Schaltung (36, 45), die zum Bereitstellen einer Lichtquelle für einen Nutzer konfiguriert ist.

13. Die Vorrichtung gemäß Beispiel 12, wobei die Lichtquelle mindestens eine LED ist.

14. Die Vorrichtung gemäß Beispiel 13, wobei der Mikrocontroller (1) zur Kontrolle der mindestens einen LED konfiguriert ist, um einen visuellen Alarm zur Anzeige einer Notsituation bereitzustellen.

15. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Vielzahl von visuellen Anzeigen (61), die zur Anzeige des verbleibenden Kapazitätszustands der internen Spannungsversorgung (32) konfiguriert sind.

16. Die Vorrichtung gemäß Beispiel 15, wobei die Vielzahl von visuellen Anzeigen (61) eine Vielzahl von LEDs umfassen, die Licht verschiedener Farben ausgeben.

17. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine visuelle Anzeige (63), die zur Warnung eines Benutzers konfiguriert ist, wenn eine Batterie verpolt angeschlossen ist.

18. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend getrennte visuelle Anzeigen (62), die zur Anzeige des Spannung-An-Status der Vorrichtung und zur Anzeige des Status der Starthilfespannung der dem Ausgangsanschluss (303) bereitgestellten Spannung konfiguriert ist.

19. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend einen manuelle Starthilfeschalter, der zum Aktivieren eines manuellen Starthilfemodus konfiguriert ist, der es einem Benutzer ermöglicht, die Starthilfespannung mit dem Ausgangsanschluss (303) zu verbinden, wenn der Fahrzeugbatterie-Isolationssensor (12) das Vorhandensein einer Fahrzeugbatterie nicht detektieren kann.

20. Die Vorrichtung gemäß Beispiel 19, wobei der Mikrocontroller (1) zur Detektion der manuellen Starthilfeschaltung für mindestens eine vorbestimmte Zeitdauer vor dem Aktivieren des manuellen Starthilfemodus konfiguriert ist.

21. Die Vorrichtung gemäß irgendeinem der vorangehenden Beispiele, ferner umfassend eine Starthilfekabelvorrichtung (400), die einen Stecker (401) umfasst, zum Einstecken in den Ausgangsanschluss, ein Kabelpaar (402a, 402b), an dessen jeweiligem einen Ende der Stecker (401) integriert ist und zum Anschließen an die Anschlüsse einer Batterie an dessen jeweiligem anderen Ende konfiguriert sind.

22. Die Vorrichtung gemäß Beispiel 21, wobei das Starthilfekabel ferner ein Paar von Ringanschlüssen (404a, 404b) umfasst, die zum jeweiligen Verbinden des Kabelpaars (402a, 402b) an dessen anderem Ende mit einem Ende eines Batterieanschlusses oder einer Batterieanschlussklemme konfiguriert sind.

23. Die Vorrichtung gemäß irgendeinem der Beispiele 21 oder 22, wobei der Ausgangsanschluss (303) und der Stecker (401) so dimensioniert sind, dass der Stecker (401) nur in einer bestimmten Orientierung in den Ausgangsanschluss (303) passt.

24. Eine Starthilfekabelvorrichtung (400), umfassend einen Stecker (401), der zum Stecken in einen Ausgangsanschluss (303) einer tragbaren Vorrichtung zur Batterieladestarthilfe (300) konfiguriert ist, die eine interne Spannungsversorgung aufweist; ein Kabelpaar (402a, 402b), das mit dem Stecker (401) an dessen einen entsprechenden Ende integriert ist; wobei das Kabelpaar (402a, 402b) so konfiguriert ist, dass es gesondert an Anschlüssen einer Batterie mit dessen entsprechend anderem Ende angeschlossen werden soll.

25. Die Starthilfekabelvorrichtung (400) gemäß Beispiel 24, ferner umfassend ein Paar von Ringanschlüssen (404a, 404b), die zum jeweiligen Verbinden des Kabelpaars (402a, 402b) an dessen anderen Ende mit einem Batterieanschluss oder einer Batterieanschlussklemme konfiguriert sind.

26. Die Starthilfekabelvorrichtung (400) gemäß irgendeinem der Beispiele 24 oder 25, wobei der Ausgangsanschluss (303) und der Stecker (401) so dimensioniert sind, dass der Stecker (401) nur in einer bestimmten Richtung in den Ausgangsanschluss (303) passt.

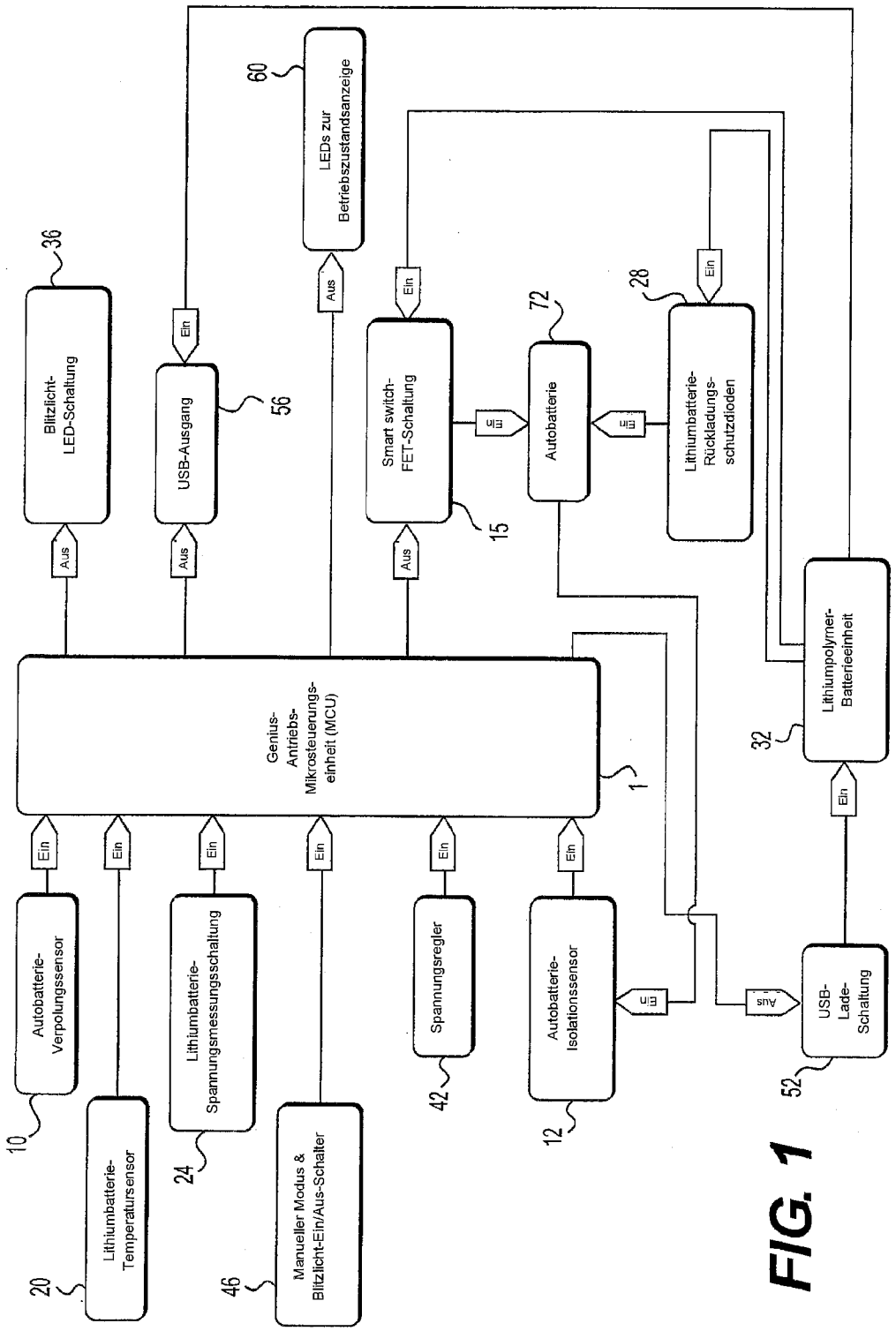

Genius-Antriebs-Mikrosteuerungs-einheit (MCU)
1
Blitzlicht-LED-Schaltung
36
USB-Ausgang
56
LEDs zur Betriebszustandsanzeige
60
Smart switch-FET-Schaltung
15
Autobatterie
72
Lithiumbatterie-Rückladungs-schutzdioden
28
Lithiumpolymer-Batterieeinheit
32
Autobatterie-Verpolungssensor
10
Lithiumbatterie-Temperatursensor
20
Lithiumbatterie-Spannungsmessungsschaltung
24
Manueller Modus & Blitzlicht-Ein/Aus-Schalter
46
Spannungsregler
42
Autobatterie-Isolationssensor
12
USB-Lade-Schaltung
52
Ein
Aus

FIG. 1

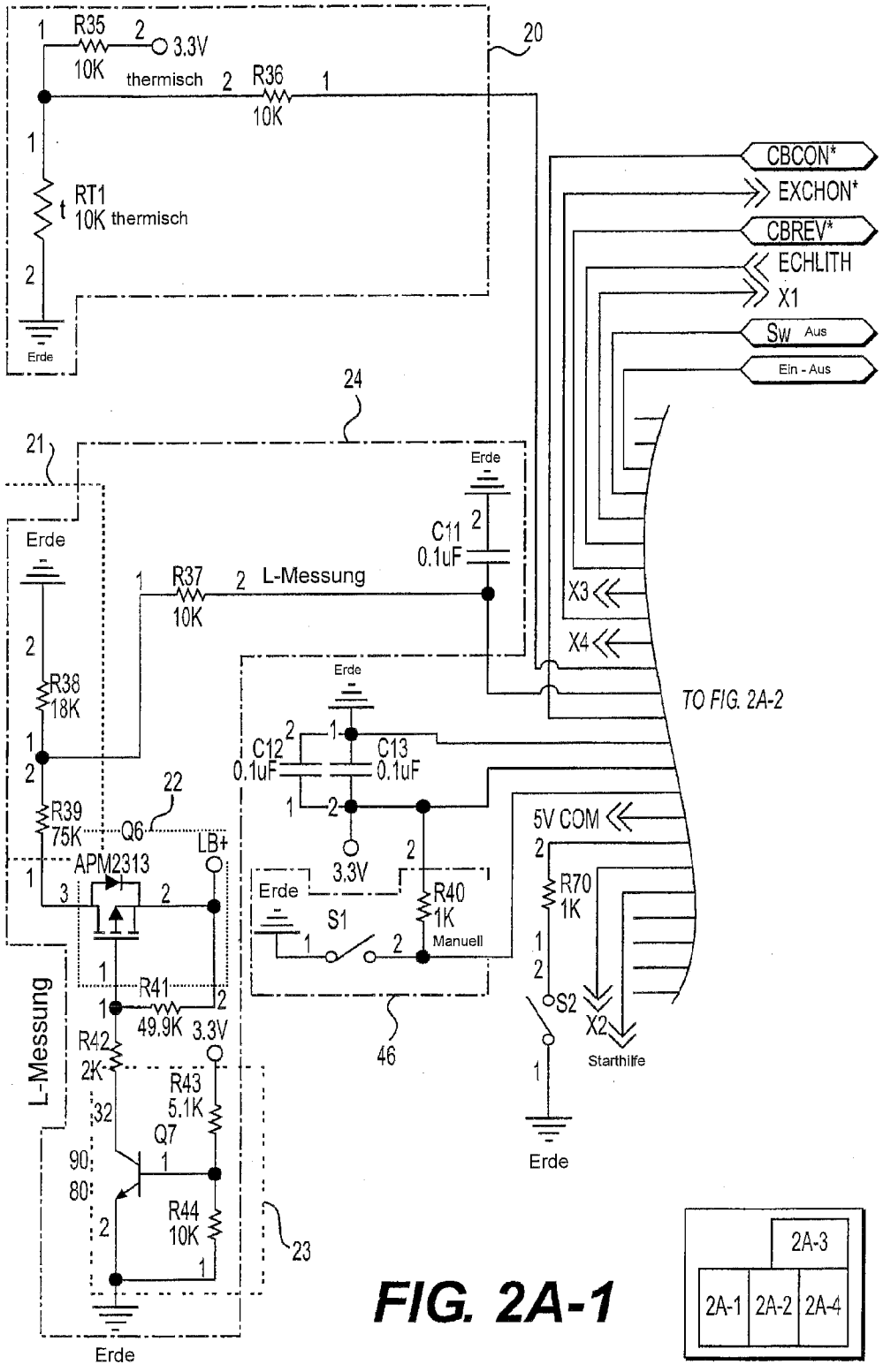
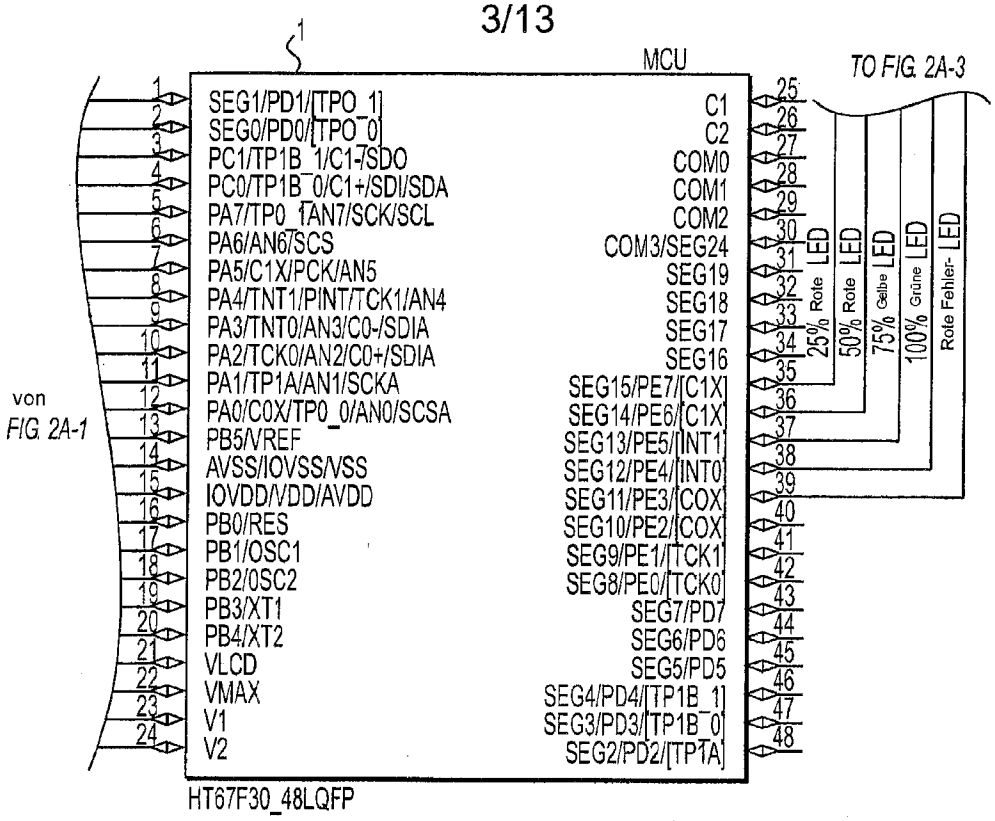
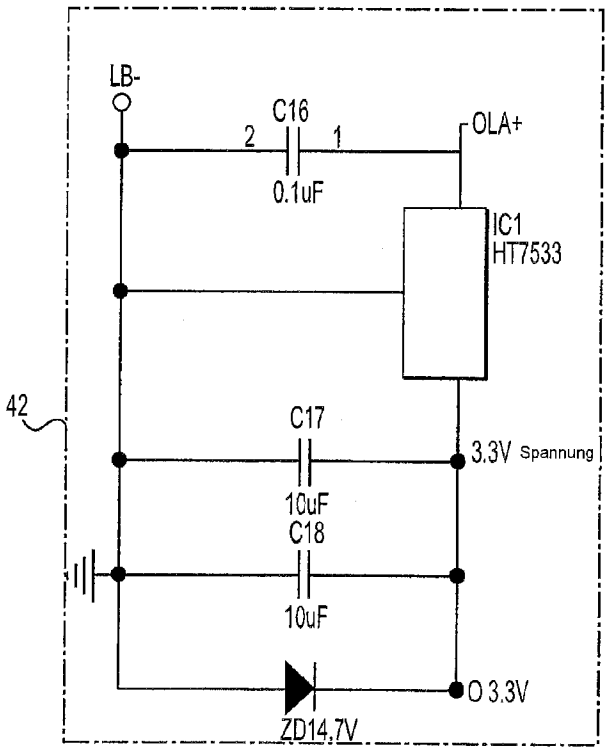

R35
10K
3.3V
thermisch
R36
10K
RT1
10K thermisch
Erde
20
24
21
C11
0.1uF
R37
10K
L-Messung
R38
18K
R39
75K
Q6
APM2313
LB+
22
C12
0.1uF
C13
0.1uF
3.3V
S1
R40
1K
Manuell
46
R41
49.9K
R42
2K
R43
5.1K
Q7
R44
10K
23
L-Messung
CBCON*
EXCHON*
CBREV*
ECHLITH
X1
Sw Aus
Ein - Aus
X3
X4
TO FIG. 2A-2
5V COM
R70
1K
S2
X2
Starthilfe

FIG. 2A-1

2A-3
2A-1
2A-2
2A-4


1
MCU
TO FIG. 2A-3
von
FIG. 2A-1
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% Rote LED
50% Rote LED
75% Gelbe LED
100% Grüne LED
Rote Fehler- LED
HT67F30_48LQFP


LB-
C16
0.1uF
OLA+
IC1
HT7533
42
C17
10uF
3.3V Spannung
C18
10uF
ZD14.7V
O 3.3V

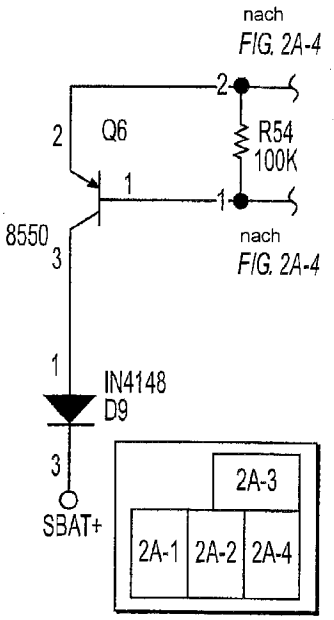

nach
FIG. 2A-4
Q6
R54
100K
8550
nach
FIG. 2A-4
IN4148
D9
SBAT+
2A-3
2A-1
2A-2
2A-4

FIG. 2A-2

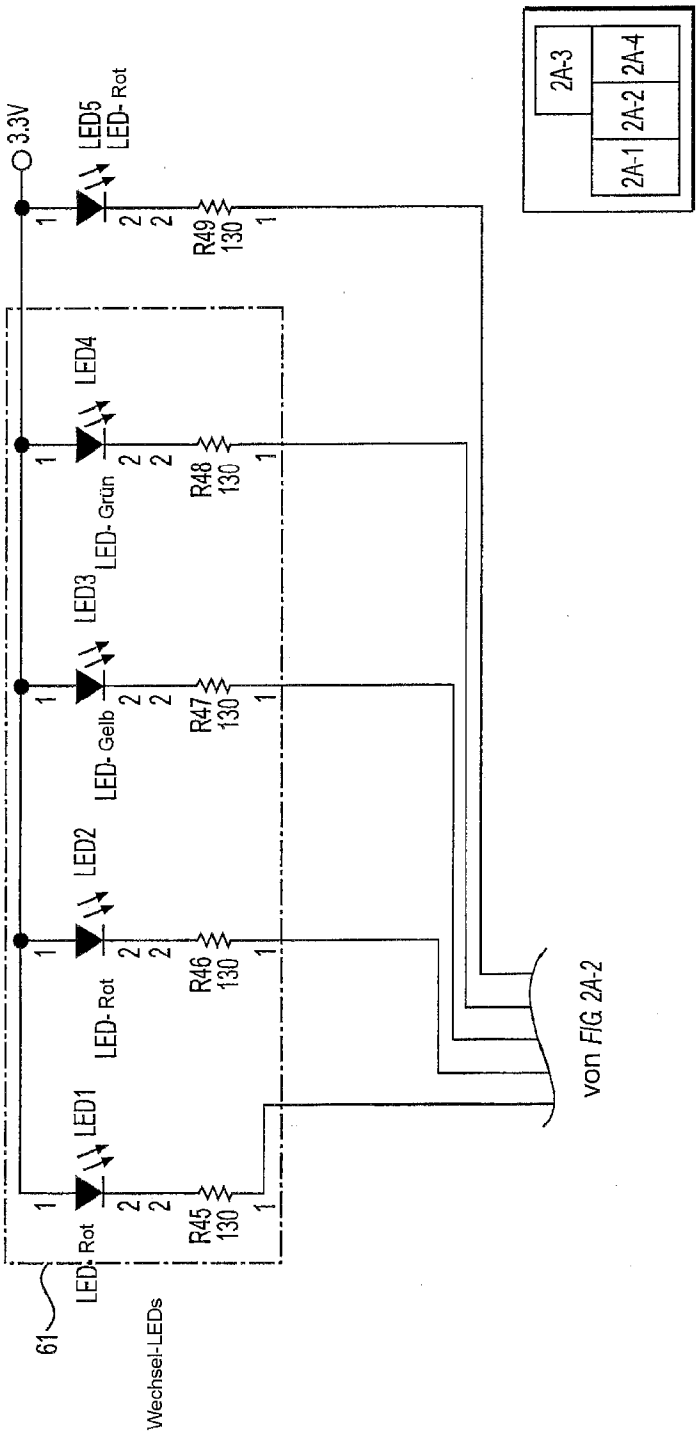

3.3V
LED5
LED- Rot
R49
130
LED4
LED- Grün
R48
130
LED3
LED- Gelb
R47
130
LED2
LED- Rot
R46
130
LED1
LED- Rot
R45
130
61
Wechsel-LEDs
von FIG 2A-2
2A-3
2A-1
2A-2
2A-4

FIG. 2A-3

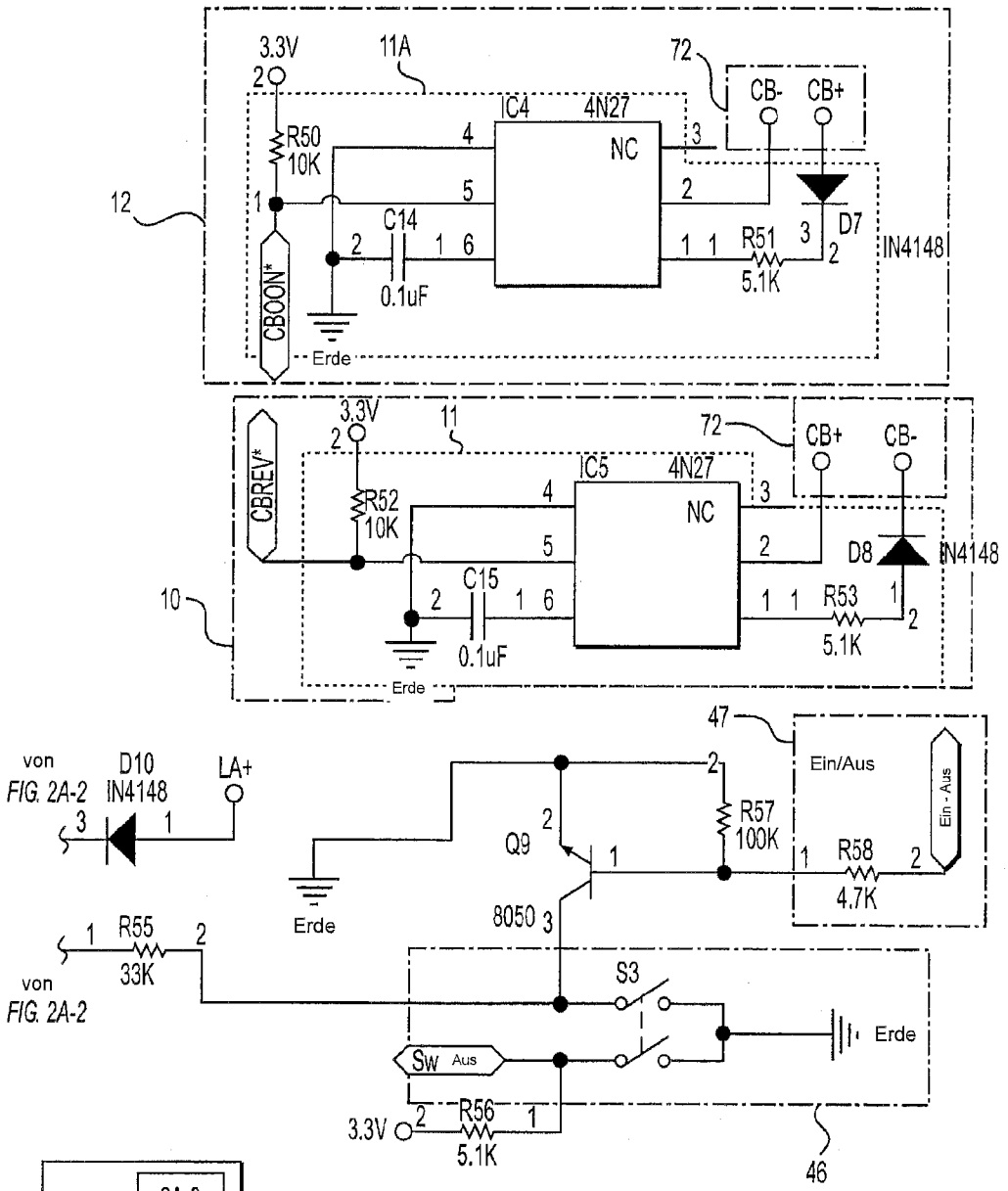

3.3V
11A
72
CB-
CB+
IC4
4N27
NC
R50
10K
12
C14
0.1uF
R51
5.1K
D7
IN4148
CBOON*
Erde
CBREV*
11
IC5
R52
C15
D8
10
R53
47
Ein/Aus
Ein - Aus
von
FIG. 2A-2
D10
LA+
Q9
8050
R57
100K
R58
4.7K
R55
33K
S3
Sw Aus
R56
46
2A-3
2A-1
2A-2
2A-4

FIG. 2A-4

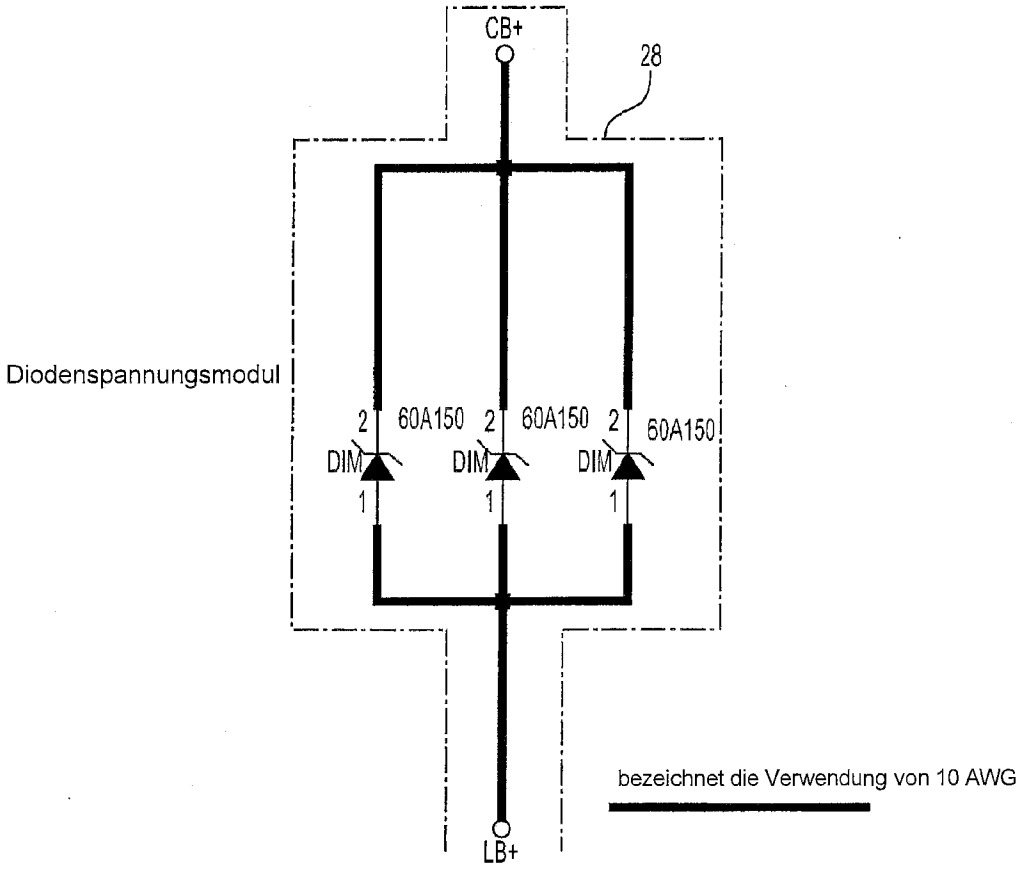
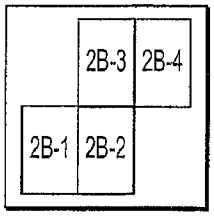

CB+
28
Diodenspannungsmodul
2
60A150
2
60A150
2
60A150
DIM
DIM
DIM
1
1
1
LB+
bezeichnet die Verwendung von 10 AWG

FIG. 2B-1


2B-3
2B-4
2B-1
2B-2

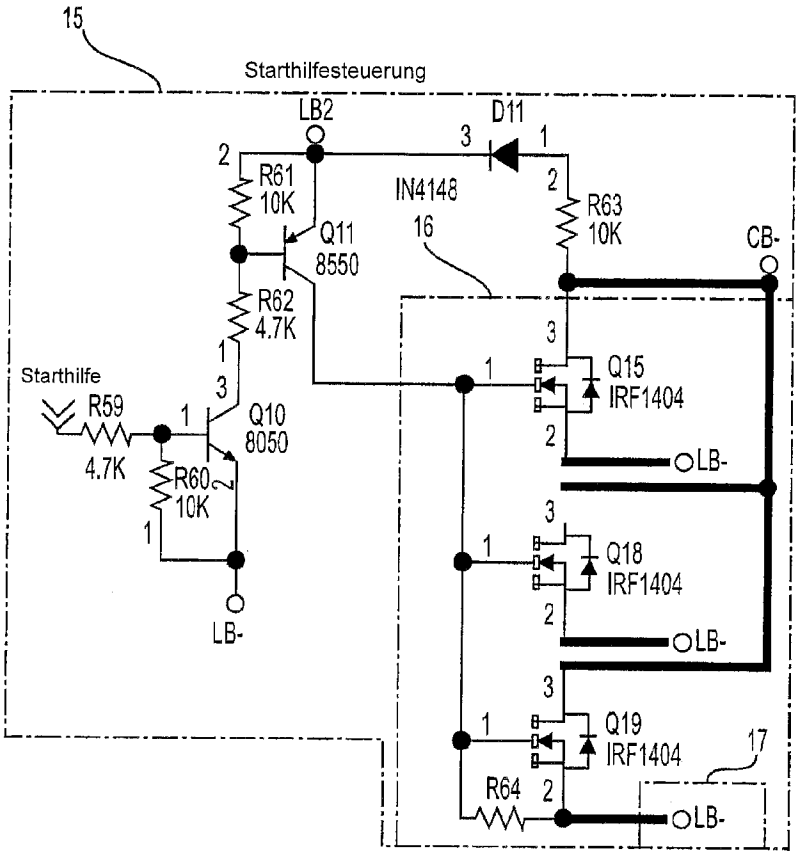
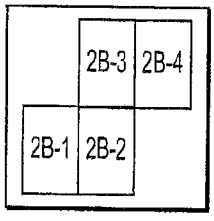

15
Starthilfesteuerung
LB2
D11
IN4148
16
R61
10K
Q11
8550
R62
4.7K
R63
10K
CB-
Starthilfe
R59
4.7K
Q10
8050
R60
10K
LB-
Q15
IRF1404
LB-
Q18
IRF1404
LB-
Q19
IRF1404
17
R64
LB-

FIG. 2B-2


2B-3
2B-4
2B-1
2B-2

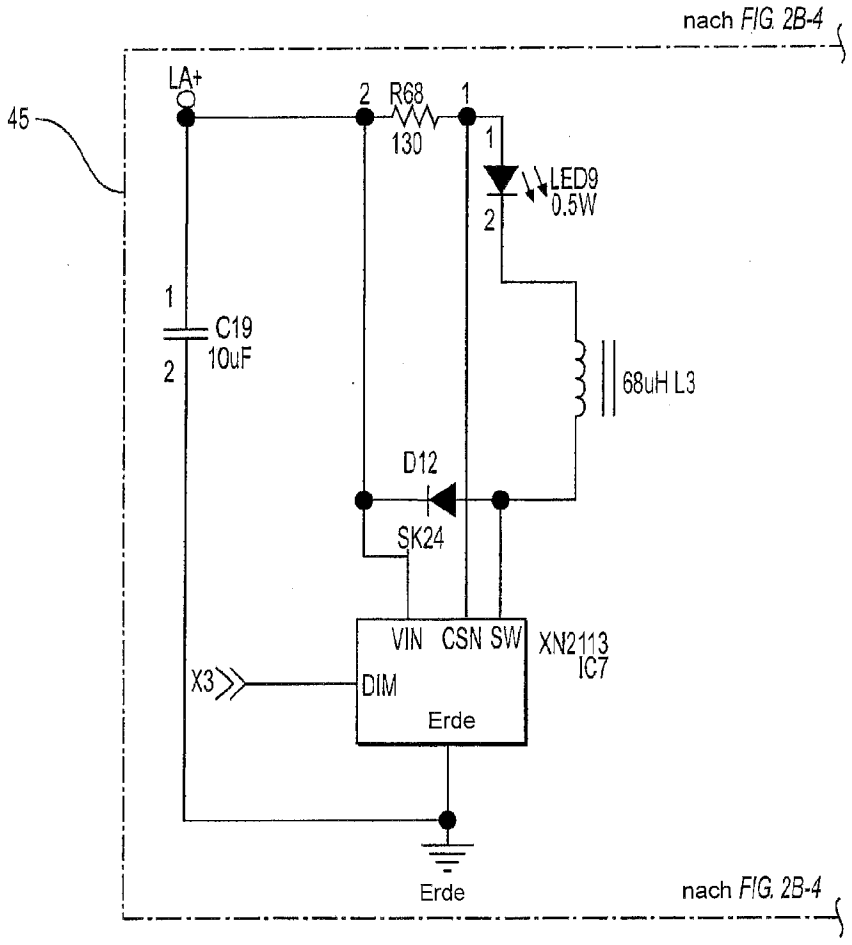
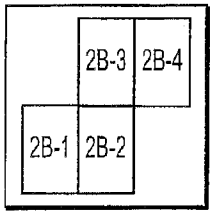

nach FIG. 2B-4
45
LA+
2
R68
130
1
1
LED9
0.5W
2
1
C19
10uF
2
68uH L3
D12
SK24
VIN
CSN
SW
XN2113
IC7
X3
DIM
Erde
Erde
nach FIG. 2B-4

FIG. 2B-3


2B-3
2B-4
2B-1
2B-2

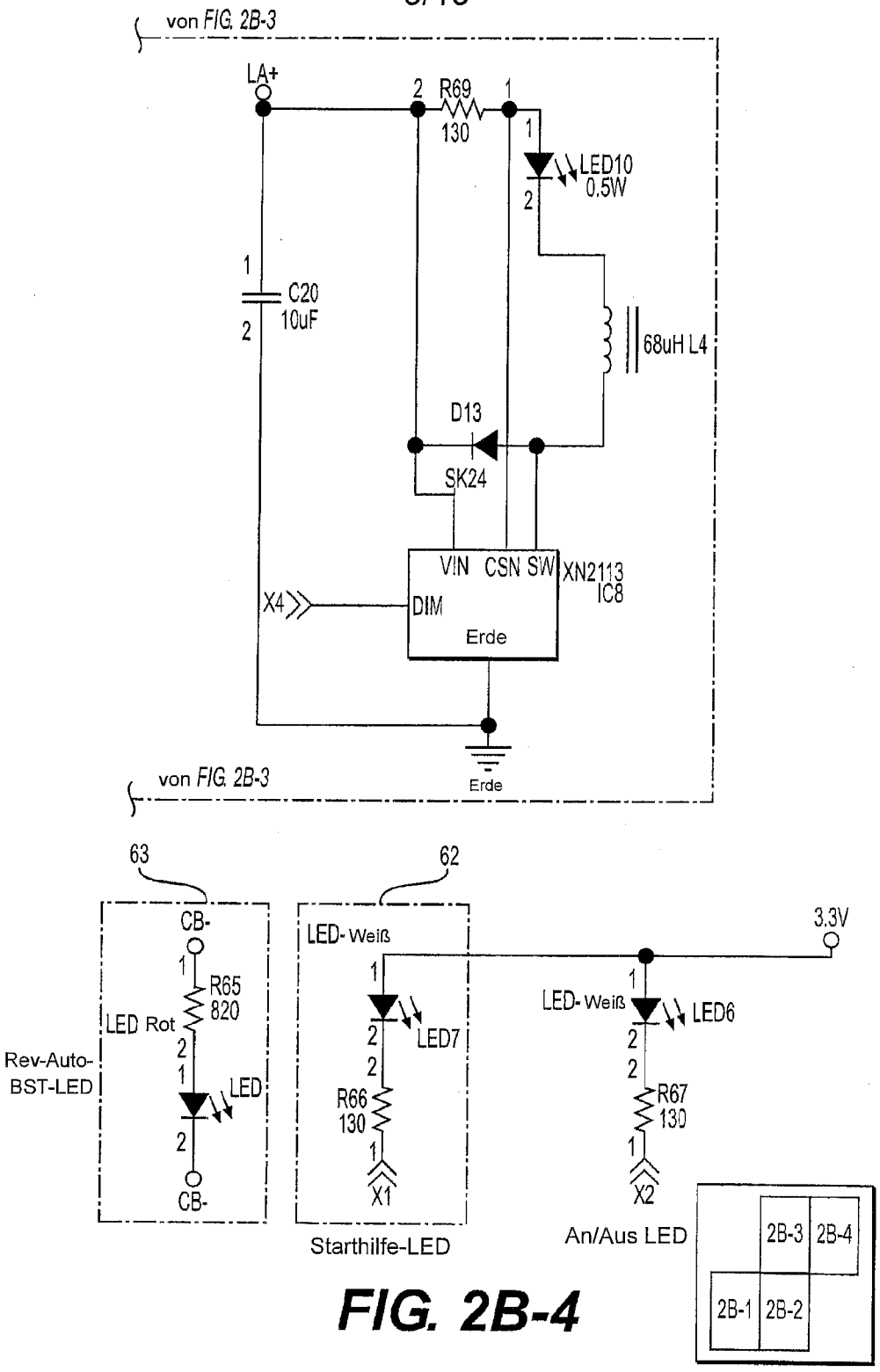

von FIG. 2B-3
LA+
2
R69
130
1
1
LED10
0.5W
2
1
C20
10uF
2
68uH L4
D13
SK24
VIN
CSN
SW
XN2113
IC8
X4
DIM
Erde
Erde
von FIG. 2B-3
63
62
CB-
1
R65
820
LED Rot
2
1
LED
2
CB-
Rev-Auto-
BST-LED
LED- Weiß
1
2
LED7
2
R66
130
1
X1
Starthilfe-LED
3.3V
1
LED- Weiß
LED6
2
2
R67
130
1
X2
An/Aus LED
2B-3
2B-4
2B-1
2B-2

FIG. 2B-4

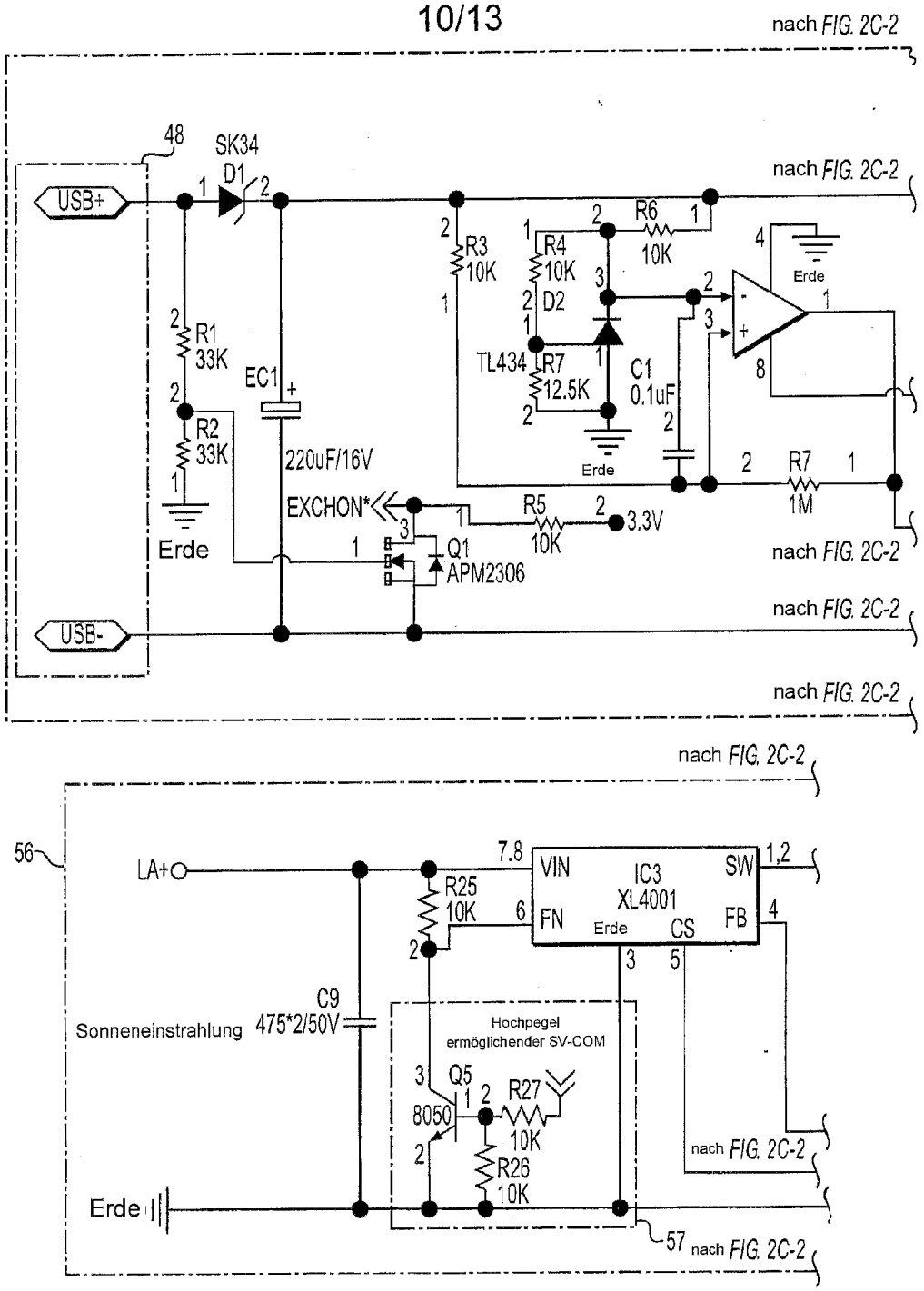
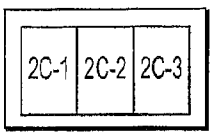

nach FIG. 2C-2
48
SK34
D1
USB+
USB-
R1
33K
R2
33K
EC1
220uF/16V
Erde
EXCHON*
R3
10K
R4
10K
D2
TL434
R7
12.5K
R6
10K
C1
0.1uF
R5
10K
3.3V
Q1
APM2306
R7
1M
56
LA+
R25
10K
IC3
XL4001
VIN
FN
CS
SW
FB
C9
475*2/50V
Sonneneinstrahlung
Hochpegel
ermöglichender SV-COM
Q5
8050
R27
10K
R26
10K
57

FIG. 2C-1


2C-1
2C-2
2C-3

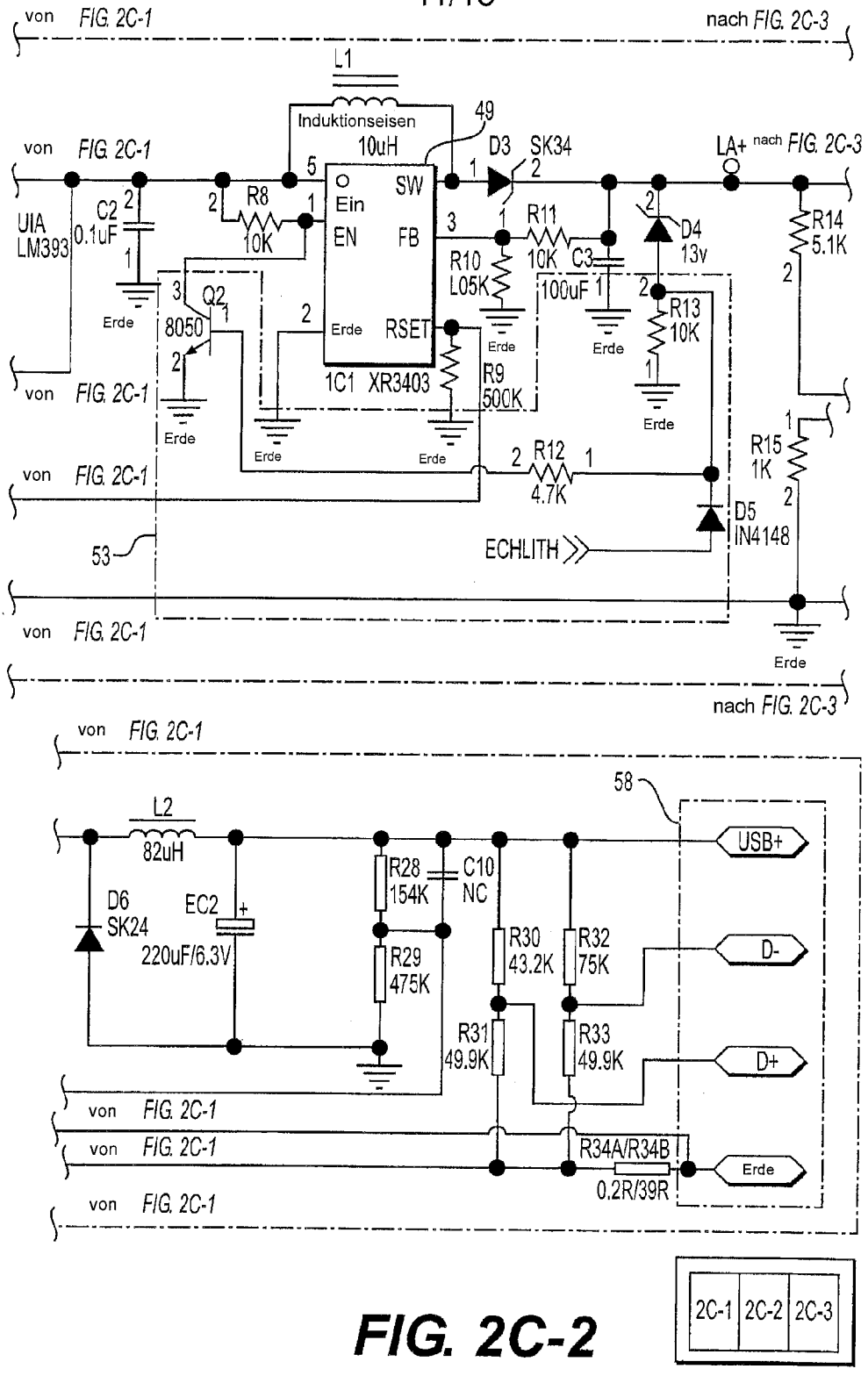
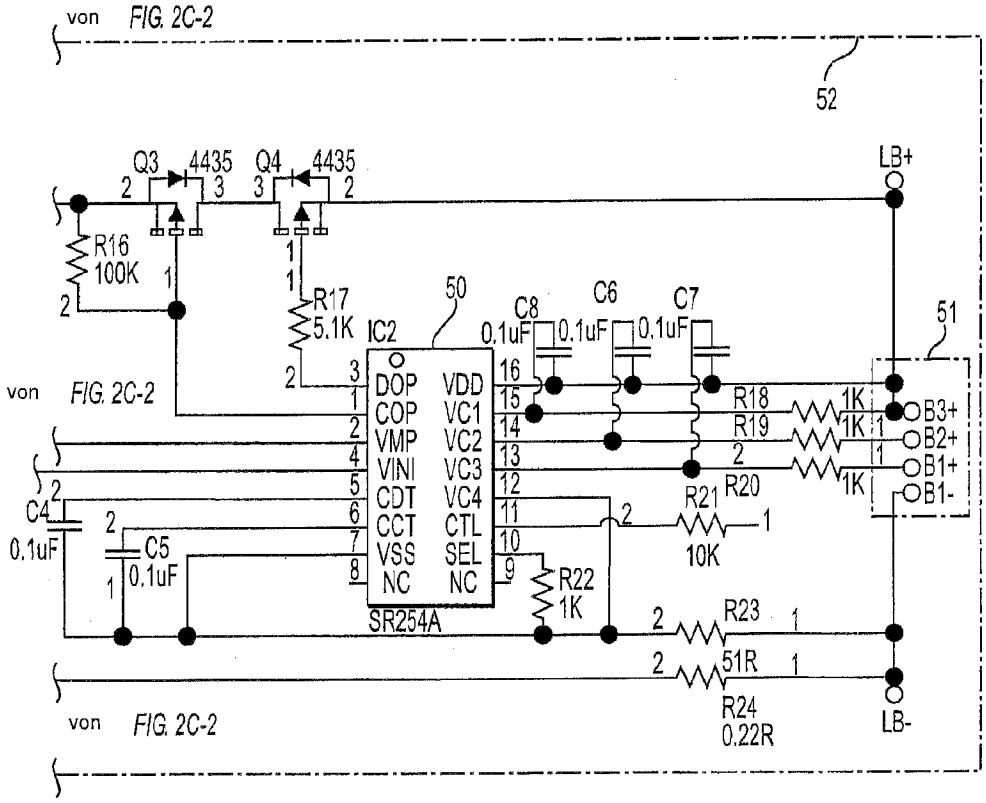

von FIG. 2C-1
nach FIG. 2C-3
L1
Induktionseisen
10uH
49
D3 SK34
LA+ nach FIG. 2C-3
UIA
LM393
C2
0.1uF
R8
10K
SW
Ein
EN
FB
RSET
1C1 XR3403
R10
L05K
R11
10K
C3
100uF
D4
13v
R13
10K
R14
5.1K
Q2
8050
R9
500K
Erde
R12
4.7K
R15
1K
D5
IN4148
ECHLITH
53
L2
82uH
D6
SK24
EC2
220uF/6.3V
R28
154K
C10
NC
R29
475K
R30
43.2K
R32
75K
R31
49.9K
R33
49.9K
58
USB+
D-
D+
R34A/R34B
0.2R/39R

FIG. 2C-2

2C-1
2C-2
2C-3


von FIG. 2C-2
52
Q3 4435
Q4 4435
LB+
R16 100K
R17 5.1K
IC2
50
C8 0.1uF
C6 0.1uF
C7 0.1uF
51
von FIG. 2C-2
DOP
COP
VMP
VINI
CDT
CCT
VSS
NC
VDD
VC1
VC2
VC3
VC4
CTL
SEL
NC
SR254A
R18 1K
R19 1K
R20 1K
R21 10K
R22 1K
R23
R24 51R 0.22R
B3+
B2+
B1+
B1-
LB-
C4 0.1uF
C5 0.1uF
von FIG. 2C-2

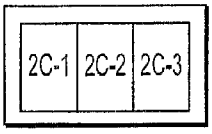

2C-1
2C-2
2C-3

FIG. 2C-3

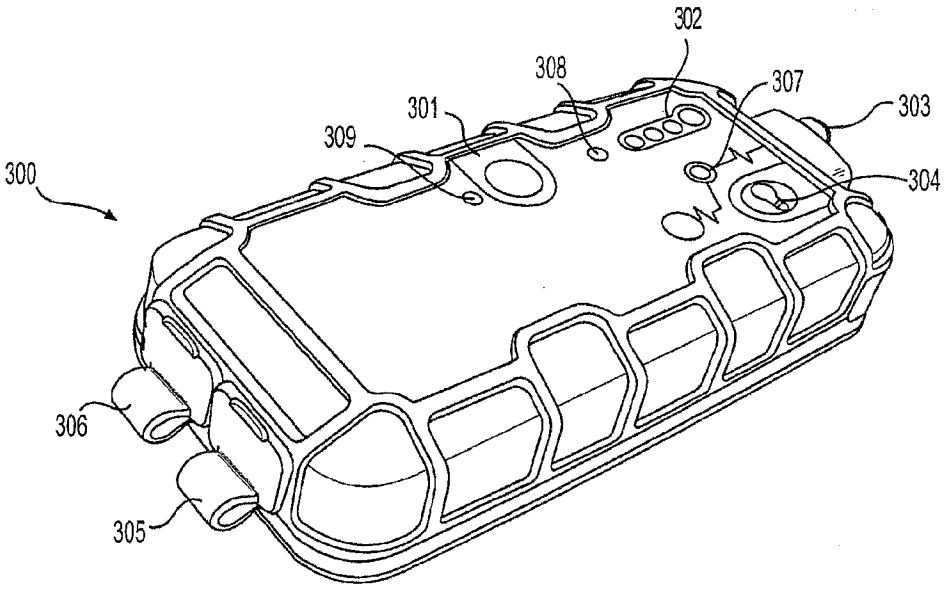

302
308
307
303
301
309
300
304
306
305

FIG. 3

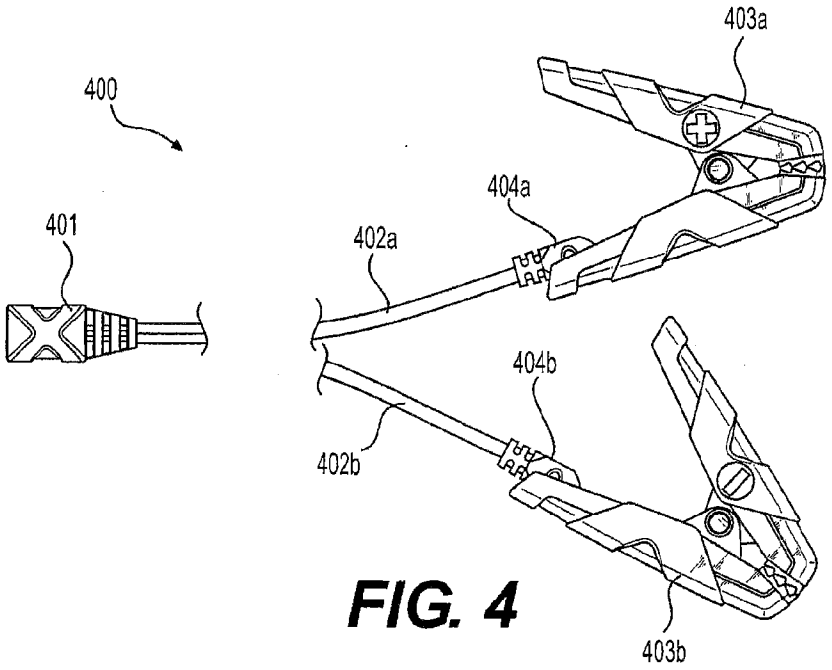

403a
400
404a
401
402a
404b
402b
403b

FIG. 4

Tragbare Starthilfevorrichtung für Fahrzeugbatterien mit Sicherheitsschutzvorrichtung

Hintergrund der Erfindung

Die vorliegende Erfindung bezieht sich im Allgemeinen auf eine Starthilfevorrichtung für ein Fahrzeug, das eine verbrauchte oder entladene Batterie aufweist. Gemäß dem Stand der Technik sind Vorrichtungen bekannt, die entweder ein Paar von elektrischen Verbindungskabeln aufweisen, die eine vollständig aufgeladene Batterie eines anderen Fahrzeugs mit der Fahrzeugstartschaltung des Fahrzeugs verbinden, das die erschöpfte Batterie enthält, oder tragbare Starthilfevorrichtungen, die eine vollständig geladene Batterie aufweisen , und die mit der Startvorrichtung des Fahrzeugmotors über ein Kabelpaar in einer Schaltung verbunden werden können.

Probleme entstanden beim Stand der Technik, wenn entweder die Drahtbrückenanschlüsse oder -klemmen der Kabel irrtümlich miteinander in Kontakt gebracht wurden, während die anderen Enden an eine geladenen Batterie angeschlossen waren, oder wenn die positiven und negativen Anschlüsse mit den Anschlüssen entgegengesetzter Polung im zu überbrückenden Fahrzeug verbunden wurden, wodurch ein Kurzschluss verursacht wurde, der zu einer Funkenbildung und einer potentiellen Beschädigung der Batterien und/oder einem körperlichen Schaden führte.

Gemäß dem Stand der Technik wurden unterschiedliche Versuche zur Beseitigung dieser Probleme unternommen. US 6,212,054, erteilt am 3. April 2001, offenbart eine Batteriestarthilfeeinheit, die empfindlich auf die Polung reagiert und passende oder unpassende Verbindungen detektieren kann, bevor ein Pfad für den elektrischen Ladungsfluss bereitgestellt wird. Die Vorrichtung verwendet einen Satz von LEDs, die mit durch eine Steuerschaltung ausgerichteten optischen Kopplern verbunden sind. Die Steuerschaltung steuert eine Spulenanordnung, die den Pfad eines Leistungsstroms steuert. Der Steuerschaltkreis lässt einen Leistungsstromfluss durch die Spulenanordnung nur dann zu, wenn die Kontaktpunkte der Starthilfekabelklemmenverbindungen richtig angelegt wurden.

Abschrift der Voranmeldung

ADC EX1002
IPR2025-00885

US 6,632,103, erteilt am 14. Oktober 2003, offenbart ein adaptives Starthilfekabel, das durch zwei Klemmenpaare verbunden ist, wobei die beiden Klemmenpaare jeweils an zwei Batterien angeschlossen sind, um Strom von einer Batterie zu einer anderen Batterie zu übertragen. Das adaptive Starthilfekabel enthält eine mit jeder Klemme verbundene Polungsdetektionseinheit, eine Schalteinheit und eine Stromdetektionseinheit, die beide zwischen den beiden Klemmenpaaren vorhanden sind. Nachdem die Polung jeder Klemme durch die Polungsdetektionseinheit abgetastet wurde, erzeugt die Schalteinheit eine geeignete Verbindung zwischen den beiden Batterien. Daher sind die positiven und negativen Anschlüsse der beiden Batterien basierend auf dem detektierten Ergebnis der Polungsdetektionseinheit passend verbunden.

US 8,493,021, erteilt am 23. Juli 2013, offenbart eine Vorrichtung, die die Spannung einer Fahrzeugbatterie, welche Starthilfe bekommt und den durch die Starthilfebatterien gelieferte Strom überwacht, um zu bestimmen, ob eine passende Verbindung hergestellt wurde und um eine Fehlerüberwachung bereitzustellen. Nur wenn die geeignete Polung detektiert wird, kann das System betrieben werden. Die Spannung wird überwacht, um einen offenen Stromkreis, getrennte leitende Klemmen, Nebenschlusskabelfehler und Spulenfehlerzustände zu erfassen. Der Strom durch das Nebenschlusskabel wird überwacht, um das Bestehen eines Batterieexplosionsrisikos und eines einen Überhitzungszustand darstellenden Überschussstromzustands zu erkennen, der zu einem Feuer führen kann. Das System enthält eine interne Batterie zum Bereitstellen der Spannung für die Batterie des Fahrzeugs, das Starthilfe bekommen soll. Sobald das Fahrzeug gestartet ist, findet eine automatische elektrische Trennung der Einheit von der Fahrzeugbatterie statt.

US 5,189,359, erteilt am 23. Februar 1993, offenbart eine Starthilfekabelvorrichtung, die zwei Brückengleichrichter zum Ausbilden einer Referenzspannung, einen Dekodierer mit vier Eingängen zum Erkennen, welche Anschlüsse verbunden werden sollen, basierend auf einem Vergleich der Spannung an jedem der vier Anschlüsse mit der Referenzspannung, und ein Relaispaar aufweist, zum Bewirken der passenden Verbindung in Abhängigkeit von der Erkennung durch den Dekodierer. Es wird keine Verbindung hergestellt, es sei denn, dass nur ein Anschluss einer jeden Batterie eine höhere Spannung als die Referenzspannung aufweist, so dass „positive" Anschlüsse angezeigt werden, und ein Anschluss eine geringere Spannung als die Referenzspannung aufweist, so dass „negative" Anschlüsse angezeigt

werden, und dass deshalb die beiden Hochspannungsanschlüsse und die beiden Niedrigspannungsanschlüsse verbunden werden können. Der Strom fließt, sobald die entsprechende Relaisvorrichtung geschlossen wird. Die Relaisvorrichtung ist vorzugsweise eine Metall-Oxid-Halbleiter-Feldeffekttransistor (MOSFET), der mit einer Serienanordnung von Photodioden, die ein MOSFET-gate-Schließ-Potential entwickeln, wenn der Dekodierer-Ausgang eine LED zum Leuchten bewirkt.

US 5,795,182, erteilt am 18. August 1998, offenbart einen polungsunabhängigen Satz von Batteriestarthilfekabeln, um eine erste Batterie mit einer zweiten Batterie zu überbrücken. Die Vorrichtung weist einen Detektor der relativen Polung auf, um zu detektieren, ob zwei Batterien über Kreuz oder parallel angeordnet sind. Ein Drei-Punkt-Hochspannungskapazitätsquerriegeldrehschalter reagiert auf den Detektor der relativen Polung zum automatischen Verbinden des Plus-Anschlusses der beiden Batterien miteinander und der Minus-Anschlüsse der beiden Batterien miteinander, ungeachtet dessen, ob die detektierte Anordnung über Kreuz oder parallel ist, und ein Unterstrom-Detektor und eine Verzögerungsschaltung zum Zurücksetzen der Vorrichtung in ihren Anfangs- und nicht angeschlossenen Zustand, nachdem die Vorrichtung von einer der Batterien getrennt wurde. Der Querriegeldrehschalter weist zwei Kontaktpaare und einen Dreharm auf, der sich um zwei getrennte Punkte dreht, um vollen elektrischen Kontakt zwischen den Kontaktpaaren zu sichern. Die Erfindung kann auch verwendet werden, um eine Batterieladevorrichtung herzustellen, die mit einer Batterie ungeachtet der Batteriepolung verbunden werden kann.

US 6,262,492, erteilt am 17. Juli 2001, offenbart ein Autobatteriestarterkabel zur passenden Kopplung einer effektiven Spannungsquelle an eine fehlerhafte oder ungeladene Batterie, die eine Relaisschaltungsstromkreis aufweist, welcher mit der Spannungsquelle und der Batterie durch zwei Stromleitungspaare verbunden ist. Erste und zweite Spannungspolungserkennungsschaltungen werden jeweils mit der Spannungsquelle und der Batterie durch ein entsprechendes Spannungsleitungspaar verbunden, um die Polung der Spannungsquelle und der Batterie zu erkennen. Eine Logikerkennungsschaltung erzeugt ein Steuersignal, das abhängig von der Polung der Spannungsquelle und der Batterie ist, und eine Treiberschaltung, die durch ein Steuersignal des Logikerkennungsschaltung gesteuert wird, steuert den Relaisschaltungsstromkreis an, so dass das genaue Koppeln der beiden Pole der Spannungsquelle an die beiden Pole der Batterie ermöglicht wird.

US 5,635,817, erteilt am 3. Juni 1997, offenbart eine Fahrzeugbatterie-Ladevorrichtung, die ein Steuergehäuse aufweist, das Kabel enthält und, die eine Strombegrenzungsvorrichtung zum Verhindern des Überschreitens eines vorbestimmten maximalen Ladestroms von ungefähr 40 bis 60 A enthält. Das Steuergehäuse weist eine Polungsdetektionsvorrichtung zur Überprüfung der passenden Polung der Verbindung der Anschlüsse der beiden Batterien und zur elektrischen Trennung der beiden Batterien im Falle des Vorliegens einer falschen Polung auf.

US 8,199,024, erteilt am 12. Juni 2012, offenbart eine Sicherheitsschaltung in einem Niedrigspannungsverbindungssystem, das die beiden Niedrigspannungssysteme getrennt lässt, bis es bestimmt, dass es sicher ist, eine Verbindung aufzubauen. Wenn die Sicherheitsschaltung bestimmt, dass keine unsicheren Bedingungen vorliegen, und dass es sicher ist, die beiden Niedrigspannungssysteme zu verbinden, kann die Sicherheitsschaltung die beiden Niedrigspannungssysteme durch einen „sanften Start" verbinden, der eine Verbindung zwischen den beiden Systemen über eine Zeitdauer bereitstellt, die induzierte Spannungsspitzen auf einem oder mehreren der Niedrigspannungssysteme reduziert oder verhindert. Wenn in einem der Niedrigspannungssysteme eine vollständig entladene Batterie eingebaut ist, wird ein Verfahren für die Detektion der passenden Polung der Verbindungen zwischen den Niedrigspannungssystemen verwendet. Die Bestimmung der Polung der entladenen Batterie erfolgt durch das Durchschicken von einem oder mehreren Testströmen durch die entladene Batterie und durch die Bestimmung, ob ein entsprechender Spannungsanstieg beobachtet wird.

US 5,793,185, erteilt am 11. August 1998, offenbart eine tragbare Starthilfevorrichtung, die Steuerkomponenten und Schaltungen zur Verhinderung von Überladung und falscher Verbindung von Batterien aufweist.

Während der Stand der Technik Lösungen für die obengenannten Probleme, wie oben diskutiert, vorschlägt, leidet jede der Lösungen des Stands der Technik an anderen Defiziten, entweder in Bezug auf Komplexität, Kosten oder die Anfälligkeit für Fehlfunktionen. Folglich existiert ein Bedarf in diesem technischen Gebiet nach weiteren Verbesserungen für Starthilfevorrichtungen von Fahrzeugen.

Zusammenfassung der Erfindung

Gemäß einem Aspekt der Erfindung, wird eine Vorrichtung zur Starthilfe eines Fahrzeugmotors bereitgestellt, die Folgendes aufweist: eine interne Spannungsversorgung; einen positiv und negativ gepolte Ausgänge aufweisenden Ausgangsanschluss; einen Fahrzeugbatterie-Isolationssensor, der mit den positiv und negativ gepolten Ausgängen in einer Schaltung verbunden ist und zur Detektion des Vorhandenseins einer Fahrzeugbatterie konfiguriert ist, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist; einen Verpolungssensor, der in einer Schaltung mit den positiv und negativ gepolten Ausgängen verbunden ist und zur Detektion der Polarität einer Fahrzeugbatterie konfiguriert ist, die zwischen den positiv und negativ gepolten Ausgängen angeschlossen ist; einen Spannungs-FET-Schalter, der zwischen der internen Spannungsversorgung und dem Ausgangsanschluss angeschlossen ist; und ein Mikrocontroller, der zum Empfangen von Eingabesignalen vom Fahrzeug-Isolationssensor und Verpolungssensor und zum Bereitstellen eines Ausgabesignals an den Spannungs-FET-Schalter so konfiguriert ist, dass der Spannungs-FET-Schalter als Antwort auf Signale der Sensoren, die das Vorhandensein einer Fahrzeugbatterie am Ausgangsanschluss und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie mit positiv und negativ gepolten Ausgängen anzeigen, eingeschaltet wird, um die interne Spannungsversorgung mit dem Ausgangsanschluss zu verbinden.

Gemäß einem weiteren Aspekt der Erfindung, besteht die interne Spannungsversorgung aus einer wieder aufladbaren Lithiumionenbatterieeinheit.

Gemäß noch einem weiteren Aspekt der Erfindung, wird eine Starthilfekabelvorrichtung bereitgestellt, die einen Stecker aufweist, der zum Einstecken in einen Ausgangsanschluss einer tragbaren Vorrichtung zur Batterieladestarthilfe, die eine interne Spannungsversorgung aufweist, konfiguriert ist; ein Kabelpaar, an dessen jeweiligem einen Ende der Stecker integriert ist; wobei das Kabelpaar zum getrennten Anschließen an die Anschlüsse einer Batterie an dessen jeweiligem anderen Ende konfiguriert ist.

Kurze Beschreibung der Zeichnungen

Figur 1 stellt einen Funktionsplan einer tragbaren Vorrichtung zur Batteriestarthilfe von Fahrzeigen gemäß einem Aspekt der vorliegenden Erfindung dar;

Figuren 2A-2C stellen schematische Schaltpläne einer beispielhaften Ausführungsform einer tragbaren Vorrichtung zur Batteriestarthilfe von Fahrzeugen gemäß einem Aspekt der vorliegenden Erfindung dar;

Figur 3 stellt eine perspektivische Ansicht einer tragbaren Vorrichtung zur Starthilfe gemäß einer beispielhaften Ausführungsform der vorliegenden Erfindung dar; und

Figur 4 stellt eine Draufsicht eines Starthilfekabels dar, das mit der tragbaren Vorrichtung zur Starthilfe gemäß einem weiteren Aspekt der vorliegenden Erfindung verwendbar ist.

Detaillierte Beschreibung der Erfindung

Figur 1 stellt einen Funktionsplan einer tragbaren Vorrichtung zur Batteriestarthilfe gemäß einem Aspekt der vorliegenden Erfindung dar. Das Herzstück der tragbaren Vorrichtung zur Batteriestarthilfe ist eine Lithiumpolymerbatterieeinheit 32, die genügend Energie speichert, um einem Fahrzeugmotor Starthilfe zu leisten, welcher von einer konventionellen 12 Volt Bleisäure- oder von einer durch ein Ventil regulierten Bleisäure-Batterie beliefert wird. In einer beispielhaften Ausführungsform weist eine Überspannungslithiumpolymerbatterieeinheit drei 3,7 V, 2666 mAh Lithiumpolymerbatterien in einer 3S1P-Konfiguration auf. Die sich ergebende Batterieeinheit liefert 11,1 V, 2666 Ah (8000 Ah bei 3,7 V, 29,6 Wh). Ein kontinuierlicher Entladungsstrom beträgt 25 C (oder 200 A), und eine Entladungsstromspitze beträgt 50 C (oder 400 A). Der maximale Ladungsstrom der Batterieeinheit beträgt 8000 mA (8 A).

Eine programmierbare Mikrocontrollereinheit (MCU) 1 erhält verschiedene Eingaben und erzeugt Informations- als auch Steuerungsausgaben. Die programmierbare MCU 1 stellt ferner eine Flexibilität für das System bereit, in dem es Aktualisierungen der Funktionalität und der Systemparameter zulässt, ohne eine Änderung der Hardware zu benötigen. Gemäß einer beispielhaften Ausführungsform wird ein 8-bit-Mikrocontroller mit einem 2K x 15-bit-Flash-Speicher verwendet, um das System zu steuern. Ein solcher Mikrocontroller ist HT67F30, der kommerziell bei Holtek Semiconductors Inc. erhältlich ist.

Eine Autobatterie-Verpolungssensor 10 überwacht die Polung der Fahrzeugbatterie 72, wenn die tragbare Vorrichtung zur Batteriestarthilfe mit dem elektrischen System des Fahrzeugs verbunden wird. Wie unten erklärt, verhindert die Starthilfevorrichtung, dass die Li-

thiumbatterieeinheit mit der Fahrzeugbatterie 72 verbunden wird, wenn die Anschlüsse der Batterie 72 mit den falschen Anschlüssen der Starthilfevorrichtung verbunden sind. Ein Autobatterie-Isolationssensor 12 detektiert, ob ein eine Fahrzeugbatterie 72 mit der Starthilfevorrichtung verbunden ist oder nicht, und verhindert, dass die Lithiumbatterieeinheit mit den Ausgangsanschlüssen der Starthilfevorrichtung verbunden wird, es sei denn, dass eine gute (z.B. aufladbare) Batterie an die Ausgangsanschlüsse angeschlossen ist.

Ein smart-switch-FET-Schaltung 15 schaltet die Lithiumbatterie der tragbaren Vorrichtung zur Batteriestarthilfe elektrisch an das elektrische System des Fahrzeugs, nur wenn bestimmt wird, dass die Fahrzeugbatterie durch die MCU 1 als vorhanden erfasst wird (als Antwort auf ein von einem Isolationssensor 12 bereitgestelltes Detektionssignal) und mit der passenden Polung angeschlossen ist (als Antwort auf ein von einem Verpolungssensor 10 bereitgestelltes Detektionssignal). Ein Lithiumbatterie-Temperatursensor 20 überwacht die Temperatur der Lithiumbatterieeinheit 32, um eine Überhitzung aufgrund von hohen Umgebungstemperaturbedingungen und übermäßiger Stromaufnahme während des Starthilfevorgangs zu detektieren. Eine Lithiumbatterie-Spannungsmessungsschaltung 24 überwacht die Spannung der Lithiumbatterieeinheit 32, um das Spannungspotential daran zu hindern, während eines Ladevorgangs zu hoch zusteigen, und während eines Entladevorgangs zu tief zu fallen.

Lithiumbatterie-Rückladungsschutzdioden 28 verhindern, dass irgendein Ladungsstrom, der an die Fahrzeugbatterie 72 geliefert wird, vom elektrischen System des Fahrzeugs in die Lithiumbatterieeinheit 32 zurückfließt. Eine Blitzlicht-LED-Schaltung 36 wird bereitgestellt, um eine Blitzlicht-Funktion zur Verstärkung des Lichts unter der Fahrzeughaube bei dunklen Bedingungen zu liefern, sowie SOS- und Stroboskoplichtfunktionen aus Sicherheitsgründen bereitzustellen, wenn ein Fahrzeug an einem potentiell gefährlichen Ort fahruntauglich wird. Ein Spannungsregler 42 stellt eine Regulierung der internen Betriebsspannung für den Mikrocontroller und die Sensoren bereit. Ein manueller Modus- und Blitzlicht-Ein/Aus-Schalter 46 erlauben es dem Nutzer, das Einschalten der tragbaren Vorrichtung zur Batterieladestarthilfe zu steuern, um den manuellen Starthilfebetrieb zu steuern, wenn das Fahrzeug keine Batterie aufweist, und die Blitzlichtfunktion zu steuern. Der manuelle Knopf funktioniert nur, wenn die Starthilfevorrichtung eingeschaltet ist. Dieser Knopf erlaubt es dem Nutzer, Fahrzeugen Starthilfe zu leisten, denen entweder eine Batterie fehlt,

oder deren Batteriespannung so niedrig ist, dass eine automatische Detektion durch die MCU nicht möglich ist. Wenn der Nutzer den manuellen Starthilfeknopf drückt und für eine vorbestimmte Zeit (wie z.B. drei Sekunden) gedrückt hält, um eine ungewollte Betätigung des manuellen Modus zu verhindern, wird die Spannung der internen Lithiumionenbatterie auf den Fahrzeugbatterie-Verbindungsanschluss geschaltet. Die einzige Ausnahme zum manuellen Starthilfebetrieb erfolgt, wenn die Autobatterie verpolt wurde. Wenn die Autobatterie verpolt wurde, sollte die Spannung der internen Lithiumbatterie niemals auf den Fahrzeugbatterie-Verbindungsanschluss geschaltet werden.

Eine USB-Ladeschaltung 52 wandelt eine Spannung von irgendeiner der USB-Ladespannungsquellen um, so dass Spannung und Strom zum Laden der Lithiumbatterieeinheit 32 geladen werden. Ein USB-Ausgang 56 stellt eine tragbare USB-Ladevorrichtung zum Laden von Smartphones, Tablet-Computern (im Folgenden Tablet genannt) und weiteren wieder aufladbaren elektronischen Vorrichtungen bereit. LEDs zur Betriebszustandsanzeige 60 stellen eine visuelle Anzeige des Lithiumbatterie-Kapazitätsstatus sowie eine Anzeige des Aktivierungsstatus des smart-switchs dar (die anzeigt, dass dem elektrischen System eine Spannung bereitgestellt wird).

Ein detaillierter Betrieb der tragbaren Starthilfevorrichtung wird nun gemäß den schematischen Diagrammen der Figuren 2A bis 2C beschrieben werden. Wie in Figur 2A gezeigt, stellt die Mikrocontrollereinheit 1 das Zentrum aller Ein- und Ausgänge dar. Der Batterie-Verpolungssensor 10 umfasst einen optisch gekoppelten Isolationsphototransistor (4N27), der mit den Anschlüssen der Fahrzeugbatterie 72 an den Eingangspins 1 und 2 mit einer Diode D8 im Leiterdraht des Pins 1 (der am negativen Anschluss CB- angeschlossen ist), so dass, falls die Batterie 72 mit den Anschlüssen der Starthilfevorrichtung mit passender Polung verbunden ist, die LED des optischen Kopplers 11 keinen Strom leiten wird, und deshalb ausgeschaltet wird, wobei der MCU 1 eine „1“ oder ein hohes Ausgabesignal bereitgestellt wird. Der Autobatterie-Isolationssensor 12 umfasst einen optisch gekoppelten Isolationsphototransistor (4N27), der mit den Anschlüssen der Fahrzeugbatterie 72 an den Eingangspins 1 und 2 mit einer Diode D7 im Leitungsdraht des Pins 1 (angeschlossen an den positiven Anschluss CB+) verbunden ist, so dass, falls die Batterie 72 an die Anschlüsse der Starthilfevorrichtung mit der passenden Polung verbunden ist, die LED des optischen Kopplers 11A einen Strom leiten wird, und deshalb eingeschaltet wird, wobei der MCU eine „0“

oder ein niedriges Ausgabesignal bereitgestellt wird, und das Vorhandensein einer Batterie über die Starthilfeausgangsanschlüsse der tragbaren Starthilfevorrichtung anzeigt.

Falls die Autobatterie 72 mit der tragbaren Starthilfevorrichtung verpolt verbunden ist, wird die LED des optischen Kopplers 11 des Verpolungssensors 10 den Strom leiten, wobei der Mikrocontrollereinheit 1 eine „0" oder ein niedriges Signal bereitgestellt wird. Ferner, falls keine Batterie mit der tragbaren Starthilfevorrichtung verbunden ist, wird die LED des optischen Kopplers 11A des Isolationssensors 12 keinen Strom leiten und wird deshalb ausgeschaltet, wobei der MCU eine „1" oder ein hohes Ausgabesignal bereitgestellt wird, das die Abwesenheit irgendeiner mit der tragbaren Starthilfevorrichtung verbundener Batterie anzeigt. Unter Verwendung dieser spezifischen Eingaben kann die Mikrocontrollersoftware der MCU 1 bestimmen, wann es sicher ist, den smart-switch-FET 15 einzuschalten, wodurch die Lithiumbatterieeinheit mit den Starthilfeanschlüssen der Starthilfevorrichtung verbunden wird. Folglich kann die MCU 1 den smart-switch-FET-Schaltung 15 davor bewahren, eingeschaltet zu werden und somit das Erzeugen von Funken/Kurzschlüssen der Lithiumbatterieeinheit verhindert werden, wenn die Autobatterie 72 entweder überhaupt nicht mit der Starthilfevorrichtung verbunden ist oder verpolt verbunden ist.

Wie in Figur 2B gezeigt, wird der smart-switch-FET 15 durch eine Mikrocontrollerausgabe 1 angesteuert. Der FET-smart-switch 15 weist drei FETs (Q15, Q18 und Q19) in Parallelschaltung auf, die die Spannung der Lithiumbatterieeinheit auf die FETs verteilt. Wenn diese Mikrocontrollerausgabe in einen logisch niedrigen Zustand gesteuert wird, befinden sich die FETs 16 alle in einem Hochwiderstandszustand, weswegen kein Stromfluss vom negativen Kontakt 17 der internen Lithiumbatterie zum negativen Kontakt der Autobatterie 72 zugelassen wird. Wenn die Mikrocontrollerausgabe in einen logisch hohen Zustand gesteuert wird, sind die FETs 16 (Q15, Q18, Q19) in einem Niedrigwiderstandszustand, der einen freien Stromfluss vom negativen Kontakt 17 (LB-) der internen Lithiumbatterieeinheit zum negativen Kontakt (CB-) der Autobatterie 72 zulässt. Auf diese Art steuert die Mikrocontrollersoftware die Verbindung der internen Lithiumbatterieeinheit 32 mit der Fahrzeugbatterie 72, um dem Fahrzeugmotor Starthilfe zu leisten.

Gemäß Figur 2A, kann die Spannung der internen Lithiumbatterieeinheit unter Verwendung der Schaltung 24 und einem der Analog-zu-Digital-Eingänge des Mikrocontrollers 1 präzise gemessen werden. Die Schaltung 24 ist vorgesehen, um zu erfassen, wann die Spannung des

Haupt-3,3 V-Reglers 42 eingeschaltet ist und den Transistor 23 einzuschalten, wenn die Spannung des Reglers 42 eingeschaltet ist. Wenn der Transistor 23 leitet, schaltet er den FET 22 ein, womit dem positiven Kontakt (LB+) der internen Lithiumbatterie ein leitender Pfad zu einem Spannungsteiler 21 bereitgestellt wird, der es zulässt, der Mikrocontroller einen niedrigeren Spannungsbereich zum Einlesen zuzuführen. Durch Verwendung dieser Eingabe kann die Mikrocontrollersoftware bestimmen, ob die Lithiumbatteriespannung während des Entladevorgangs zu niedrig oder während des Aufladevorgangs zu hoch ist, und sie kann eine entsprechende Maßnahme zur Verhinderung der Beschädigung der elektronischen Komponenten unternehmen.

Weiterhin kann gemäß Figur 2A durch zwei Vorrichtungen 20 mit negativem Temperaturkoeffizienten (NTC) die Temperatur der internen Lithiumbatterieeinheit 32 präzise gemessen werden. Dies sind Vorrichtungen, die ihren Widerstand verringern, wenn ihre Temperatur steigt. Die Schaltung stellt einen Spannungsteiler dar, der das Ergebnis den beiden Analog-zu Digital-(A/D)-Eingänge dem Mikrocontroller zuführt. Die Mikrocontrollersoftware kann dann bestimmen, wann die interne Lithiumbatterie zu heiß ist, um einen Starthilfevorgang zuzulassen, wodurch der Aufbau Betriebssicherheit erhält.

Die Hauptspannungsreglersschaltung 42 ist so gestaltet, dass die Spannung der internen Lithiumbatterie in einen geregelten Wert von 3,3 V umgewandelt wird, der vom Mikrocontroller 1 sowie von anderen Komponenten der Starthilfevorrichtung für die interne Betriebsspannung verwendet wird. Drei Lithiumbatterie-Rückaufladungs-(back-charging)-Schutzdioden 28 (siehe Figur 2B) werden eingesetzt, um den Stromfluss nur von der internen Lithiumbatterieeinheit 32 zur Autobatterie 72 zuzulassen, und nicht von der Autobatterie zur internen Lithiumbatterie. Auf diese Art kann, falls das elektrische System des Autos von seiner Lichtmaschine geladen wird, die interne Lithiumbatterie nicht rückaufladen (und hierbei beschädigt werden), was eine weitere Stufe der Betriebssicherheit bereitstellt.

Der Hauptspannungseinschalter 46 (Figur 2A) ist eine Kombination, die einen Doppelpol- oder Zweiwegebetrieb zulässt, so dass das Produkt mit einem Drücken eingeschaltet werden kann, wenn es sich im Aus-Zustand befindet, oder ausgeschaltet werden kann, wenn es sich im Ein-Zustand befindet. Diese Schaltung verwendet auch einen Mikrocontrollerausgang 47, um die Spannung aufrecht zu erhalten, wenn die Schaltung durch den Ein-Schalter aktiviert wurde. Wenn der Schalter gedrückt wird, schiebt der Mikrocontroller diesen Ausgang

auf eine Hochlogikstufe, um die Spannung „am Leben" zu erhalten, wenn der Schalter losgelassen wird. Auf diese Art behält der Mikrocontroller die Kontrolle, wenn die Spannung ausgeschaltet wird, wenn der Ein-/Aus-Schalter wieder aktiviert wird, oder wenn die Lithiumbatteriespannung zu niedrig wird. Die Mikrocontrollersoftware weist auch einen Zeitschalter auf, der die Spannung nach einer vorbestimmten Zeitdauer (wie z.B. 8 Stunden) bei Nichtverwendung ausschaltet.

Die Blitzlicht-LED-Schaltung 45, die in Figur 2B gezeigt wird, steuert den Betrieb der Blitzlicht-LEDs. Zwei Ausgänge des Mikrocontrollers 1 sind den beiden separaten LEDs zugeordnet. Daher können die LEDs zur Ausbildung von Stroboskopen und SOS-Mustern unabhängig software-gesteuert werden, was der Starthilfevorrichtung noch ein weiteres Sicherheitsmerkmal hinzugefügt. LED-Anzeigen geben dem Betreiber die Rückmeldung, die dieser braucht, um zu verstehen, was mit dem Produkt passiert. Vier separate LEDs 61 (Figur 2A) werden durch entsprechende einzelne Ausgänge des Mikrocontrollers 1 gesteuert, um eine Anzeige der verbleibenden Kapazität der internen Lithiumbatterie bereitzustellen. Diese LEDs werden in einem Format vergleichbar dem einer „Kraftstoffanzeige" mit 25%-, 50%-, 75%- und 100%-(rot, rot, gelb, grün)-Kapazitätsanzeigen gesteuert. Eine LED-Anzeige 63 (Figur 2B) gibt dem Benutzer eine visuelle Warnung, wenn die Fahrzeugbatterie 72 verpolt angeschlossen worden ist. Starthilfe- und Ein-/Aus-LEDs 62 stellen jeweils visuelle Anzeigen bereit, wenn die Starthilfevorrichtung Starthilfespannung bereitstellt, und wenn die Starthilfevorrichtung eingeschaltet wird.

Eine USB-Ausgangsschaltung 56 (Figur 2C) weist einen USB-Ausgang auf, zum Laden von tragbaren elektronischen Vorrichtungen, wie z.B. Smartphones durch die interne Lithiumbatterieeinheit 32. Eine Steuerschaltung 57 des Mikrocontrollers 1 lässt es zu, den USB-Ausgang 56 durch die Softwaresteuerung ein- oder auszuschalten, um zu verhindern, dass die interne Lithiumbatterie eine zu niedrige Kapazität erreicht. Die USB-Ausgabe wird mittels einer Standard-USB-Verbindung 58 an das Äußere der Vorrichtung geführt, wobei die Standard-USB-Verbindung 58 den erforderlichen Standardspannungsteiler aufweist, um es zu ermöglichen, Smartphones eine bestimmte Spannung zuzuführen, die sie benötigenden. .

Die USB-Ladeschaltung 52 lässt es zu, dass die interne Batterieeinheit 32 durch eine Standard-USB-Ladevorrichtung geladen wird. Dieser Spannungseingang verwendet eine Standard-Mikro-USB-Verbindung 48, die es erlaubt, Standardkabel zu verwenden. Das von der

Standard-USB-Ladevorrichtung bereitgestellte Potential von 5 V wird in 12,4 V DC-Spannung hochgewandelt, das zum Laden der internen Lithiumbatterieeinheit unter Verwendung eines DC-DC-Konverters 49 benötigt wird. Der DC-DC-Konverter 49 kann durch die Schaltung 53 mittels eines Mikrocontrollerausgangs 1 ein- und ausgeschaltet werden.

Auf diese Art kann die Mikrocontrollersoftware den Ladevorgang ausschalten, falls die Batteriespannung durch den A/D-Eingang 22 als zu hoch bestimmt worden ist. Zusätzliche Betriebssicherheit wird zur Abhilfe der Beseitigung von Überladung der internen Lithiumbatterie durch Verwendung einer Lithiumbatterie-Ladesteuerung 50 bereitgestellt, die einen Ladungsausgleich der internen Lithiumbatteriezellen 51 bereitstellt. Diese Steuerung stellt auch eine redundante Betriebssicherheit zur Beseitigung von Überladung der internen Lithiumbatterie bereit.

Figur 3 stellt eine perspektivische Ansicht einer tragbaren Vorrichtung 300 gemäß einer beispielhaften Ausführungsform der Erfindung dar. 301 ist ein Spannungseinschalter. 302 zeigt die LED-„Kraftstoff"-Anzeigen 61. 303 zeigt einen 12 V-Ausgangsanschluss, der mit einer weiter unten beschriebenen Kabelvorrichtung 400 verbindbar ist. 304 zeigt einen Blitzlichtsteuerungsschalter zum Aktivieren der Blitzlicht-LEDs 45. 305 stellt einen USB-Eingangsanschluss zum Laden der internen Lithiumbatterie dar, und 306 ist ein USB-Ausgangsanschluss, um anderen tragbaren Vorrichtungen, wie z.B. Smartphones, Tablets, Musikspieler, usw., Ladung durch die Lithiumbatterie bereitzustellen. 307 stellt eine „Starthilfe-Ein"-Anzeige dar, die anzeigt, dass die Spannung dem 12 V-Ausgangsanschluss bereitgestellt wird. 308 stellt eine Verpolungsanzeige dar, die anzeigt, dass die Fahrzeugbatterie in Bezug auf die Polung falsch verbunden ist. 309 stellt eine „Spannung-Ein"-Anzeige dar, die anzeigt, dass die Vorrichtung für den Betrieb hochgefahren ist.

Figur 4 zeigt eine Starthilfekabelvorrichtung 400, die insbesondere für eine Verwendung mit der tragbaren Vorrichtung 300 ausgestaltet ist. Die Vorrichtung 400 weist einen Stecker 401 auf, der so gestaltet ist, dass er in den 12 V-Ausgangsanschluss 303 der tragbaren Vorrichtung 300 einsteckt werden kann. Der Stecker 401 ist in einem Kabelpaar 402a und 402b integriert, und die Kabel sind jeweils mit den Batterieanschlussklemmen 403a und 403b mittels Ringanschlüssen 404a und 404b verbunden. Der Anschluss 303 und der Stecker 401 können so dimensioniert werden, dass der Stecker 401 nur in den Anschluss 303 in einer bestimmten Orientierung passt, wodurch gesichert ist, dass die Klemme 403a einer positi-

ven Polung entsprechen wird, und die Klemme 403b einer negativen Polung entsprechen wird, wie darauf angegeben. Zusätzlich können die Ringanschlüsse 404a und 404b von den Klemmen getrennt werden und direkt mit den Anschlüssen der Fahrzeugbatterie verbunden werden. Dieses Merkmal kann nützlich sein, um beispielsweise die Kabel 402a bis 402b dauerhaft mit der Fahrzeugbatterie zu verbinden. Im Falle einer Erschöpfung der Batteriespannung könnte die tragbare Starthilfevorrichtung 300 durch Einstecken des Steckers 401 in den Anschluss 303 in sehr einfacher Weise passend mit der Batterie verbunden werden.

Die Erfindung, die auf diese Weise beschrieben wurde, wird dem Fachmann ersichtlich sein, so dass diese in vielen Arten variiert werden kann, ohne vom Umfang der Erfindung abzuweichen. Jede und alle solche Variationen werden innerhalb des Umfangs der folgenden Ansprüche erfasst.

Patentansprüche

1. Vorrichtung zur Starthilfe eines Fahrzeugmotors, umfassend:

eine interne Spannungsversorgung (32);

einen positiv und negativ gepolte Ausgänge (CB-, CB+) aufweisenden Ausgangsanschluss (303);

einen Fahrzeugbatterie-Isolationssensor (12), der mit den positiv und negativ gepolten Ausgängen (CB-, CB+) in einer Schaltung verbunden ist, und zur Detektion des Vorhandenseins einer Fahrzeugbatterie (32), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;

einen Verpolungssensor (10), der in einer Schaltung mit den positiv und negativ gepolten Ausgängen (CB-, CB+) verbunden ist, und zur Detektion der Polarität einer Fahrzeugbatterie (72), die zwischen den positiv und negativ gepolten Ausgängen (CB-, CB+) angeschlossen ist, konfiguriert ist;

ein Spannungs-FET-Schalter (15), der zwischen der internen Spannungsversorgung (32) und dem Ausgangsanschluss (305) angeschlossen ist; und

ein Mikrocontroller (1), der zum Empfangen von Eingabesignalen vom Fahrzeug-Isolationssensor (12) und vom Verpolungssensor (10) und zum Bereitstellen eines Ausgabesignals an den Spannungs-FET-Schalter (15) so konfiguriert ist, dass der Spannungs-FET-Schalter (15) als Antwort auf Signale der Sensoren, die das Vorhandensein einer Fahrzeugbatterie (72) am Ausgangsanschluss (303) und die passende Polverbindung von positiven und negativen Anschlüssen der Fahrzeugbatterie (72) mit positiv und negativ gepolten Ausgängen (CB-, CB+) anzeigen, eingeschaltet wird, um die interne Spannungsversorgung (32) mit dem Ausgangsanschluss (303) zu verbinden.

2. Die Vorrichtung gemäß Anspruch 1, wobei die interne Spannungsversorgung (32) eine Lithiumionenbatterie umfasst.

3. Die Vorrichtung gemäß Anspruch 2, wobei die Lithiumionenbatterie eine Batterieeinheit aus mehreren Lithiumionenbatterien umfasst.

4. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, wobei der Spannungs-FET-Schalter (15) eine Vielzahl von FETs in Parallelschaltung (16) umfasst.

5. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, wobei der Fahrzeug-Isolationssensor (12) und der Verpolungssensor (10) optisch gekoppelte Isolationsphototransistoren umfassen.

6. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend eine Vielzahl von Spannungsdioden (28), die zwischen den Ausgangsanschluss (303) und der internen Spannungsversorgung (32) gekoppelt sind, um eine Rückaufladung der internen Spannungsversorgung (32) durch ein an den Ausgangsanschluss (303) angeschlossenes elektrisches System zu verhindern.

7. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen Temperatursensor (20)zur Detektion der Temperatur der internen Spannungsversorgung (32) und zum Bereitstellen eines Temperatursignals an den Mikrocontroller (1).

8. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend eine Spannungsmessungsschaltung (24), die zur Messung der Ausgabespannung der internen Spannungsversorgung (32) und zum Bereitstellen eines Spannungsmessungssignals an den Mikrocontroller (1) konfiguriert ist.

9. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend ein Spannungsregler (42), der zur Umwandlung der Ausgabespannung der internen Spannungsversorgung (32) in einen Spannungspegel konfiguriert ist, der geeignet ist, um internen Komponenten der Vorrichtung eine Betriebsspannung bereitzustellen.

10. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen USB-Ausgangsanschluss (56), der zum Bereitstellen einer Ladungsspannung der internen Spannungsversorgung (32) an eine USB-ladbare Vorrichtung konfiguriert ist.

11. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen USB-Ladeanschluss (52), der zum Bereitstellen einer Ladespannung von einer externen Spannungsquelle an die interne Spannungsversorgung (32) konfiguriert ist.

12. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen Blitzlicht-Schaltung (36, 45), die zum Bereitstellen einer Lichtquelle für einen Nutzer konfiguriert ist.

13. Die Vorrichtung gemäß Anspruch 12, wobei die Lichtquelle mindestens eine LED ist.

14. Die Vorrichtung gemäß Anspruch 13, wobei der Mikrocontroller (1) zur Kontrolle der mindestens einen LED konfiguriert ist, um einen visuellen Alarm zur Anzeige einer Notsituation bereitzustellen.

15. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend eine Vielzahl von visuellen Anzeigen (61), die zur Anzeige des verbleibenden Kapazitätszustands der internen Spannungsversorgung (32) konfiguriert sind.

16. Die Vorrichtung gemäß Anspruch 15, wobei die Vielzahl von visuellen Anzeigen (61) eine Vielzahl von LEDs umfassen, die Licht verschiedener Farben ausgeben.

17. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend eine visuelle Anzeige (63), die zur Warnung eines Benutzers konfiguriert ist, wenn eine Batterie verpolt angeschlossen ist.

18. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend getrennte visuelle Anzeigen (62), die zur Anzeige des Spannung-An-Status der Vorrichtung und zur Anzeige des Status der Starthilfespannung der dem Ausgangsanschluss (303) bereitgestellten Spannung konfiguriert ist.

19. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend einen manuelle Starthilfeschalter, der zum Aktivieren eines manuellen Starthilfemodus konfiguriert ist, der es einem Benutzer ermöglicht, die Starthilfespannung mit dem Ausgangsanschluss (303) zu verbinden, wenn der Fahrzeugbatterie-Isolationssensor (12) das Vorhandensein einer Fahrzeugbatterie nicht detektieren kann.

20. Die Vorrichtung gemäß Anspruch 19, wobei der Mikrocontroller (1) zur Detektion der manuellen Starthilfeschaltung für mindestens eine vorbestimmte Zeitdauer vor dem Aktivieren des manuellen Starthilfemodus konfiguriert ist.

21. Die Vorrichtung gemäß irgendeinem der vorangehenden Ansprüche, ferner umfassend eine Starthilfekabelvorrichtung (400), die einen Stecker (401) umfasst, zum Einstecken in den Ausgangsanschluss, ein Kabelpaar (402a, 402b), an dessen jeweiligem einen Ende der

Stecker (401) integriert ist und zum Anschließen an die Anschlüsse einer Batterie an dessen jeweiligem anderen Ende konfiguriert sind.

22. Die Vorrichtung gemäß Anspruch 21, wobei das Starthilfekabel ferner ein Paar von Ringanschlüssen (404a, 404b) umfasst, die zum jeweiligen Verbinden des Kabelpaars (402a, 402b) an dessen anderem Ende mit einem Ende eines Batterieanschlusses oder einer Batterieanschlussklemme konfiguriert sind.

23. Die Vorrichtung gemäß irgendeinem der Ansprüche 21 oder 22, wobei der Ausgangsanschluss (303) und der Stecker (401) so dimensioniert sind, dass der Stecker (401) nur in einer bestimmten Orientierung in den Ausgangsanschluss (303) passt.

24. Eine Starthilfekabelvorrichtung (400), umfassend:

einen Stecker (401), der zum Stecken in einen Ausgangsanschluss (303) einer tragbaren Vorrichtung zur Batterieladestarthilfe (300) konfiguriert ist, die eine interne Spannungsversorgung aufweist;

ein Kabelpaar (402a, 402b), das mit dem Stecker (401) an dessen einen entsprechenden Ende integriert ist;

wobei das Kabelpaar (402a, 402b) so konfiguriert ist, dass es gesondert an Anschlüssen einer Batterie mit dessen entsprechend anderem Ende angeschlossen werden soll.

25. Die Starthilfekabelvorrichtung (400) gemäß Anspruch 24, ferner umfassend ein Paar von Ringanschlüssen (404a, 404b), die zum jeweiligen Verbinden des Kabelpaars (402a, 402b) an dessen anderen Ende mit einem Batterieanschluss oder einer Batterieanschlussklemme konfiguriert sind.

26. Die Starthilfekabelvorrichtung (400) gemäß irgendeinem der Ansprüche 24 oder 25, wobei der Ausgangsanschluss (303) und der Stecker (401) so dimensioniert sind, dass der Stecker (401) nur in einer bestimmten Richtung in den Ausgangsanschluss (303) passt.

Zusammenfassung der Offenbarung

Eine tragbare Vorrichtung zur Starthilfe eines Fahrzeugmotors umfasst eine wieder aufladbare Lithiumionenbatterieeinheit und einen Mikrocontroller. Die Lithiumionenbatterie ist durch einen FET-smart-Schalter an eine Stromausgabeschnittstelle der Vorrichtung gekoppelt, die durch den Mikrocontroller betrieben wird. Ein Fahrzeugbatterie-Isolationssensor, der mit positiv und negativ gepolten Ausgängen in einer Schaltung verbunden ist, detektiert das Vorhandensein einer Fahrzeugbatterie, die zwischen positiv und negativ gepolten Ausgängen angeschlossen ist. Ein Verpolungssensor, der mit den positiv und negativ gepolten Ausgängen in einer Schaltung verbunden ist, detektiert die Polung einer Fahrzeugbatterie, die zwischen den positiv und negativ geladenen Ausgängen angeschlossen ist, so dass es dem Mikrocontroller ermöglicht, Spannung von der Lithiumionen-Spannungseinheit an den Ausgangsanschluss nur zu liefern, wenn eine funktionierende Batterie mit dem Ausgangsanschluss verbunden ist und nur wenn die Batterie mit der passenden Polung an die positiven und negativen Anschlüsse angeschlossen ist.

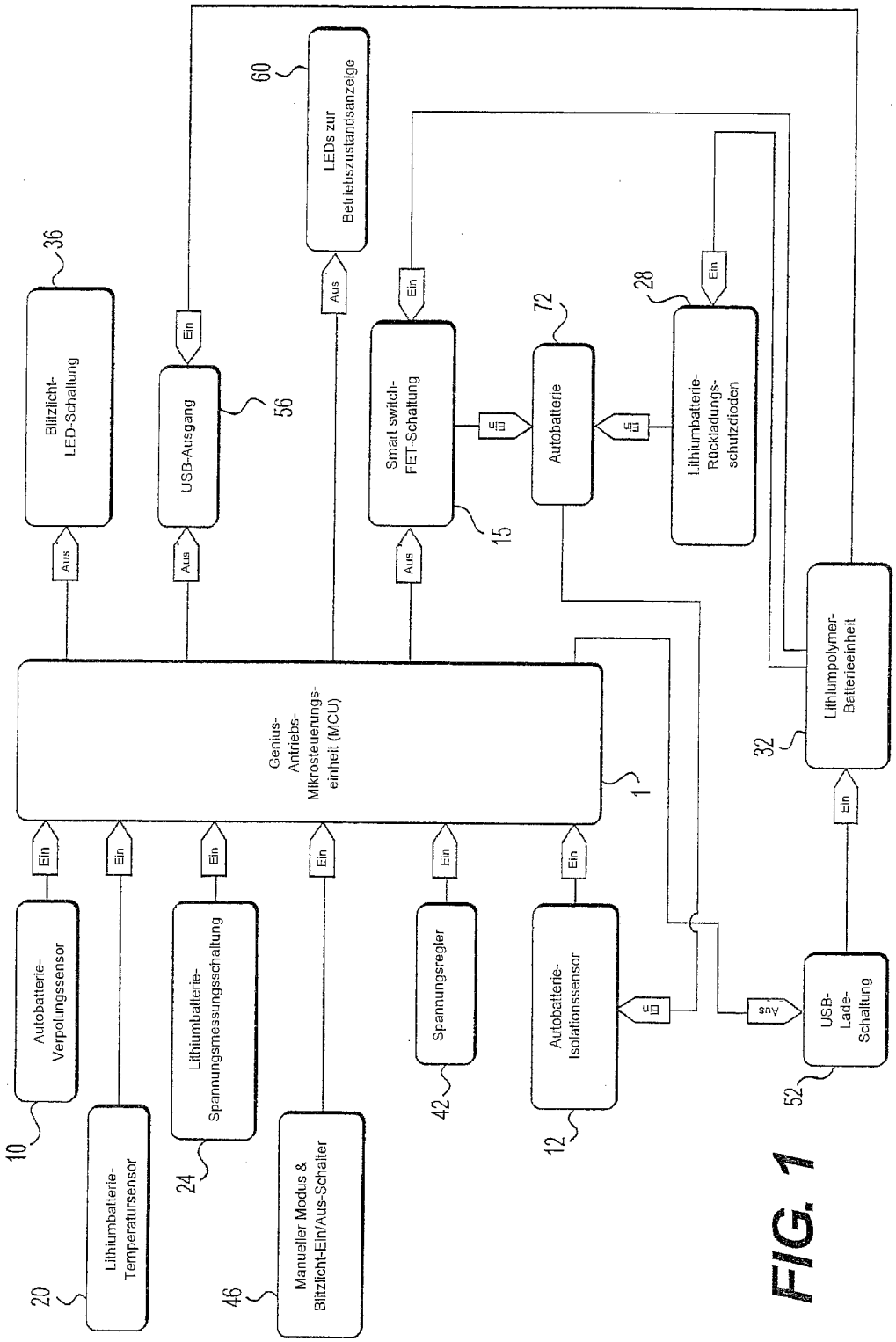

Blitzlicht-LED-Schaltung
36
USB-Ausgang
56
LEDs zur Betriebszustandsanzeige
60
Smart switch-FET-Schaltung
15
Autobatterie
72
Lithiumbatterie-Rückladungs-schutzdioden
28
Genius-Antriebs-Mikrosteuerungs-einheit (MCU)
1
Lithiumpolymer-Batterieeinheit
32
Autobatterie-Verpolungssensor
10
Lithiumbatterie-Temperatursensor
20
Lithiumbatterie-Spannungsmessungsschaltung
24
Manueller Modus & Blitzlicht-Ein/Aus-Schalter
46
Spannungsregler
42
Autobatterie-Isolationssensor
12
USB-Lade-Schaltung
52
Ein
Aus

FIG. 1

2/13

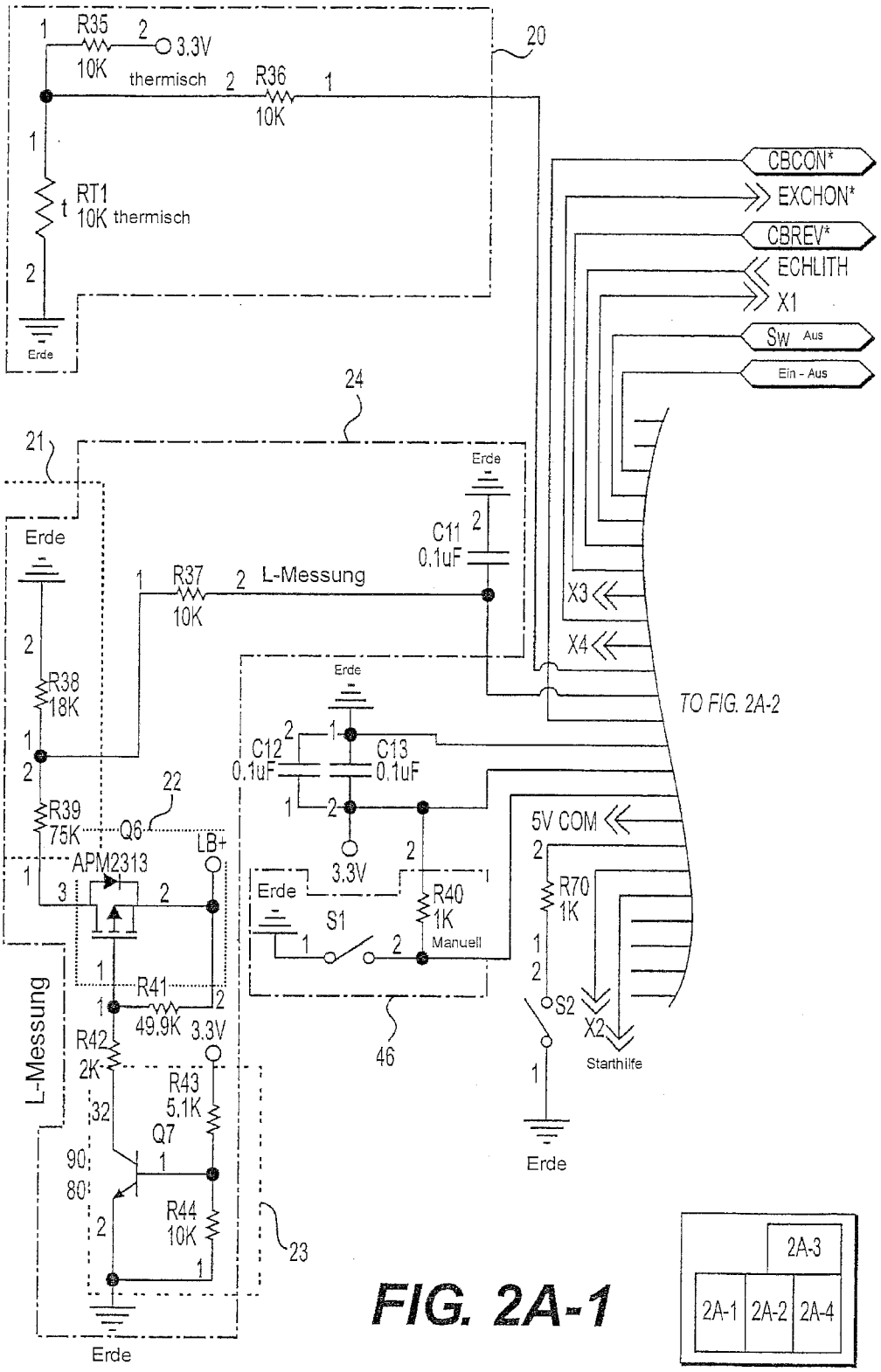
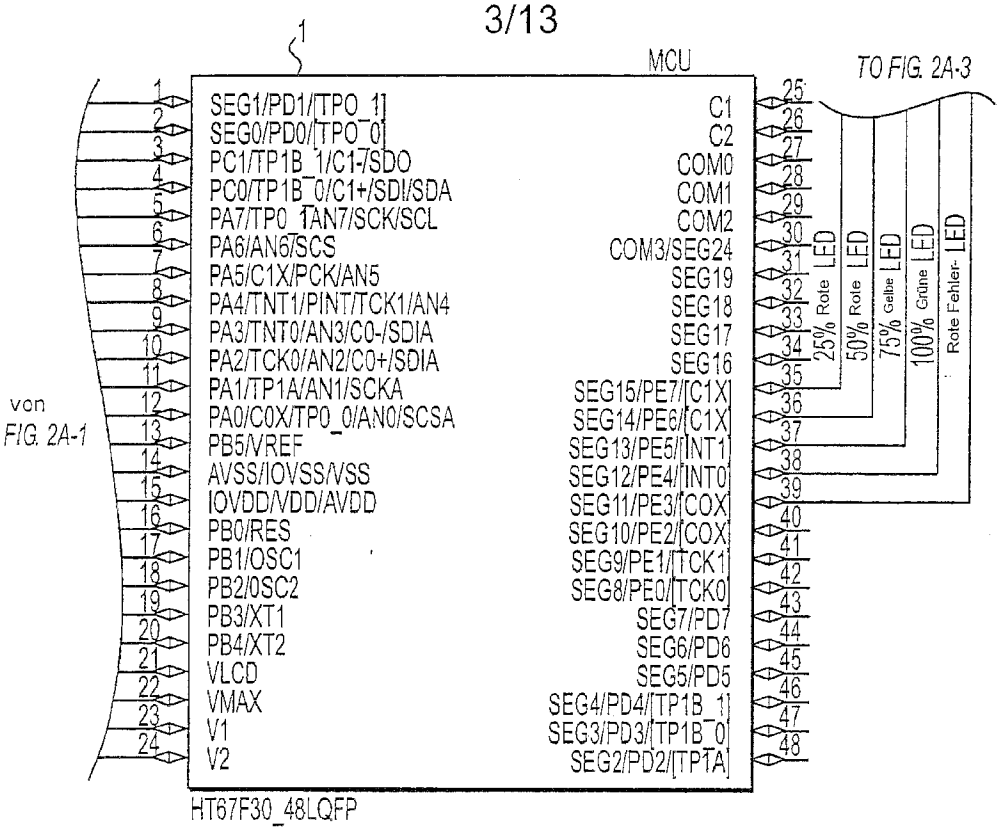

R35
10K
3.3V
thermisch
R36
10K
RT1
10K thermisch
Erde
20
CBCON*
EXCHON*
CBREV*
ECHLITH
X1
SW Aus
Ein - Aus
24
21
C11
0.1uF
R37
10K
L-Messung
X3
X4
TO FIG. 2A-2
R38
18K
C12
0.1uF
C13
0.1uF
R39
75K
Q6
22
APM2313
LB+
5V COM
R70
1K
S1
R40
1K
Manuell
S2
X2
Starthilfe
R41
49.9K
R42
2K
R43
5.1K
Q7
R44
10K
46
23
L-Messung

FIG. 2A-1

2A-3
2A-1
2A-2
2A-4


1
MCU
TO FIG. 2A-3
von
FIG. 2A-1
SEG1/PD1/[TPO_1]
SEG0/PD0/[TPO_0]
PC1/TP1B_1/C1-/SDO
PC0/TP1B_0/C1+/SDI/SDA
PA7/TP0_1AN7/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/OSC2
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/[TPTA]
25% Rote LED
50% Rote LED
75% Gelbe LED
100% Grüne LED
Rote Fehler- LED
HT67F30_48LQFP

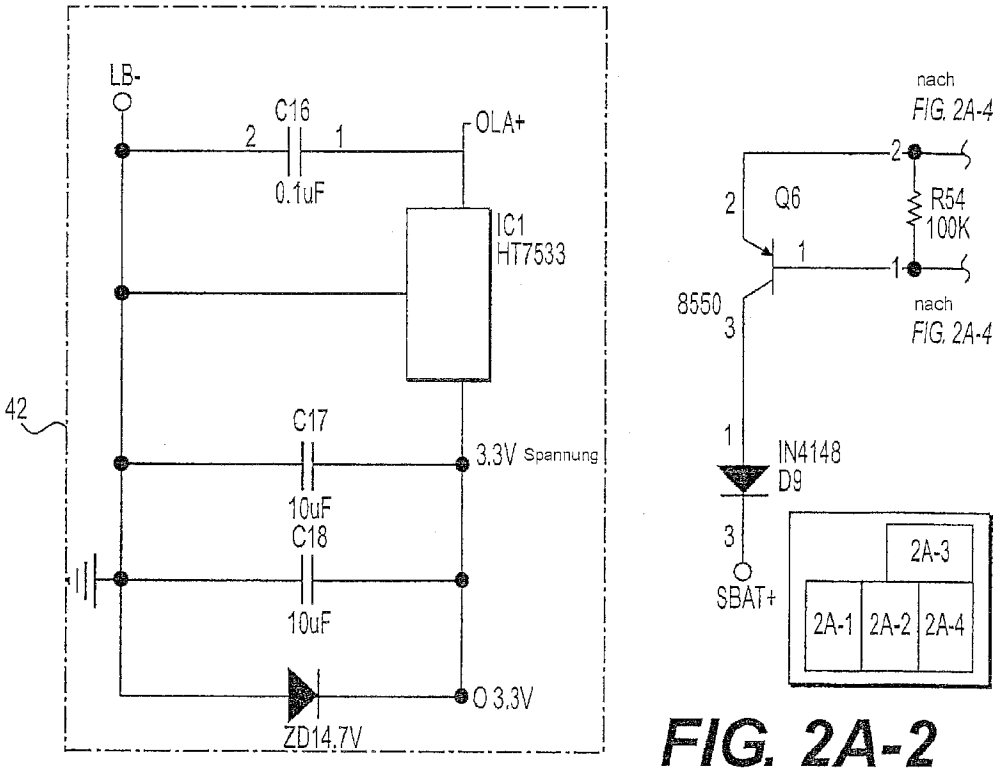

LB-
C16
0.1uF
OLA+
IC1
HT7533
42
C17
10uF
3.3V Spannung
C18
10uF
ZD14.7V
3.3V
nach
FIG. 2A-4
Q6
R54
100K
8550
nach
FIG. 2A-4
IN4148
D9
SBAT+
2A-3
2A-1
2A-2
2A-4

FIG. 2A-2

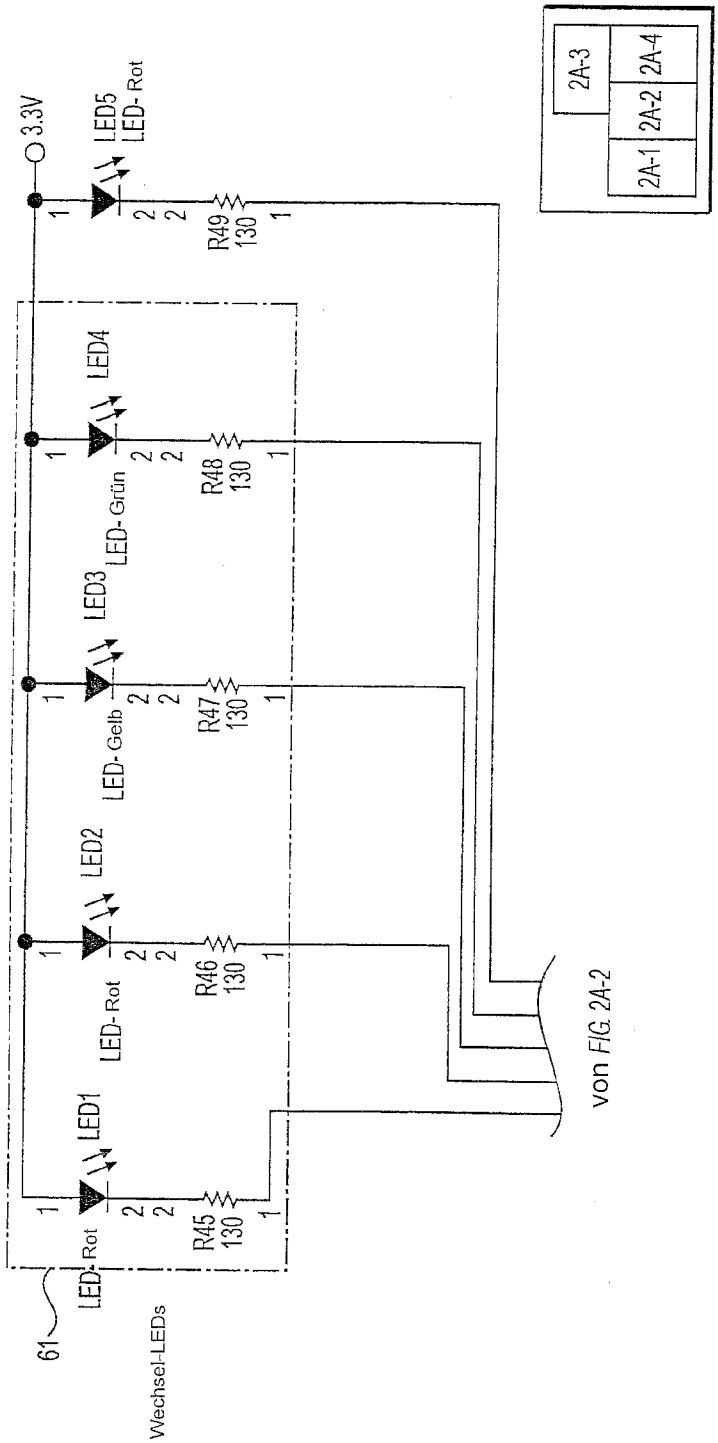
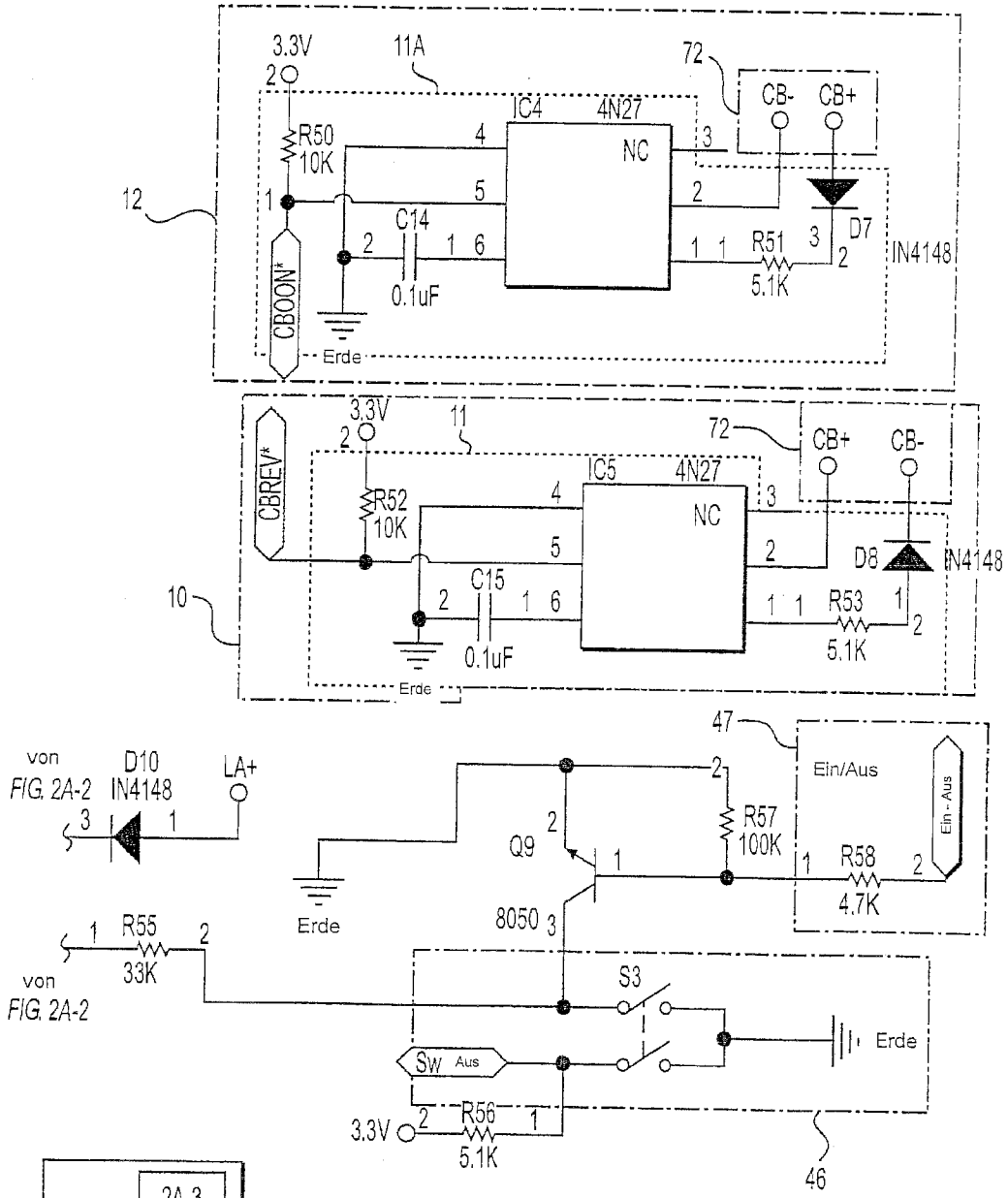

3.3V
LED5
LED- Rot
R49
130
LED4
LED- Grün
R48
130
LED3
LED- Gelb
R47
130
LED2
LED- Rot
R46
130
LED1
LED- Rot
R45
130
61
Wechsel-LEDs
von FIG. 2A-2
2A-3
2A-4
2A-2
2A-1

FIG. 2A-3

5/13


3.3V
11A
72
CB-
CB+
IC4
4N27
NC
R50
10K
12
C14
0.1uF
CBOON*
Erde
R51
5.1K
D7
IN4148
11
CBREV*
IC5
R52
C15
D8
R53
10
von
FIG. 2A-2
D10
IN4148
LA+
47
Ein/Aus
Ein - Aus
Q9
R57
100K
R58
4.7K
8050
R55
33K
S3
SW Aus
R56
46

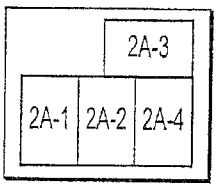

2A-3
2A-1
2A-2
2A-4

FIG. 2A-4

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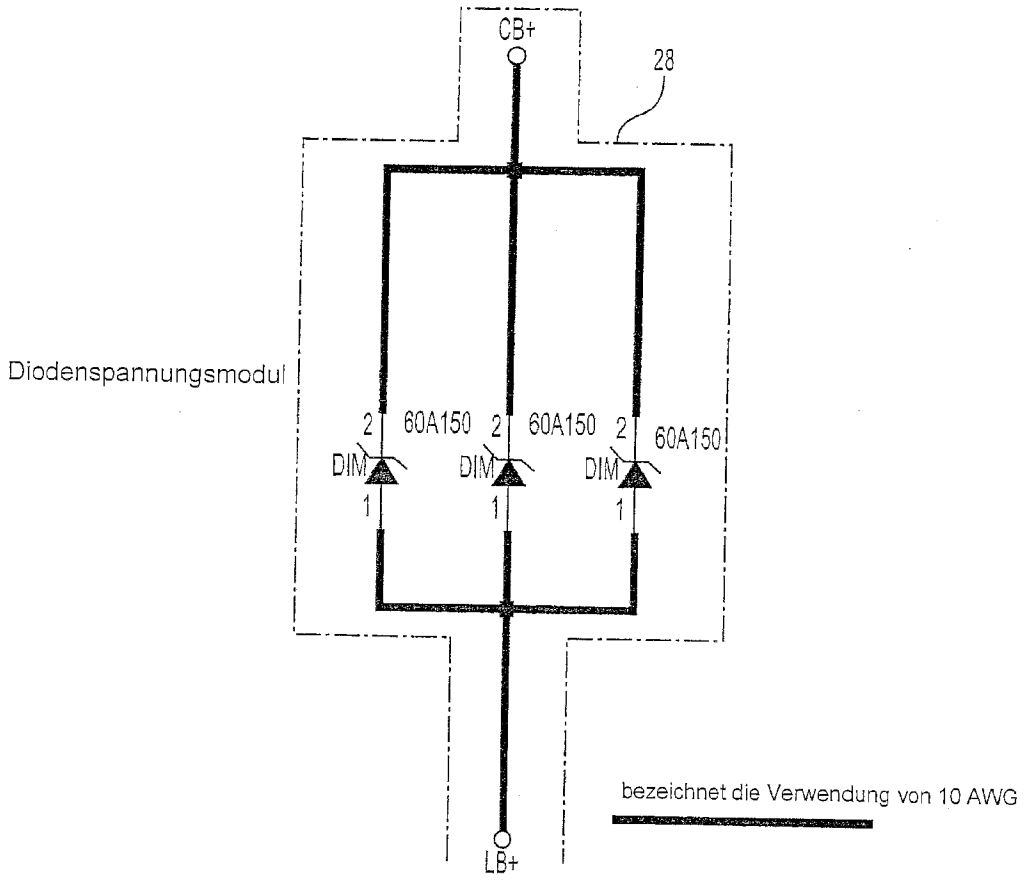
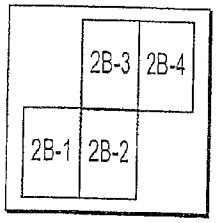

CB+
28
Diodenspannungsmodul
2
60A150
2
60A150
2
60A150
DIM
DIM
DIM
1
1
1
LB+
bezeichnet die Verwendung von 10 AWG

FIG. 2B-1


2B-3
2B-4
2B-1
2B-2

7/13

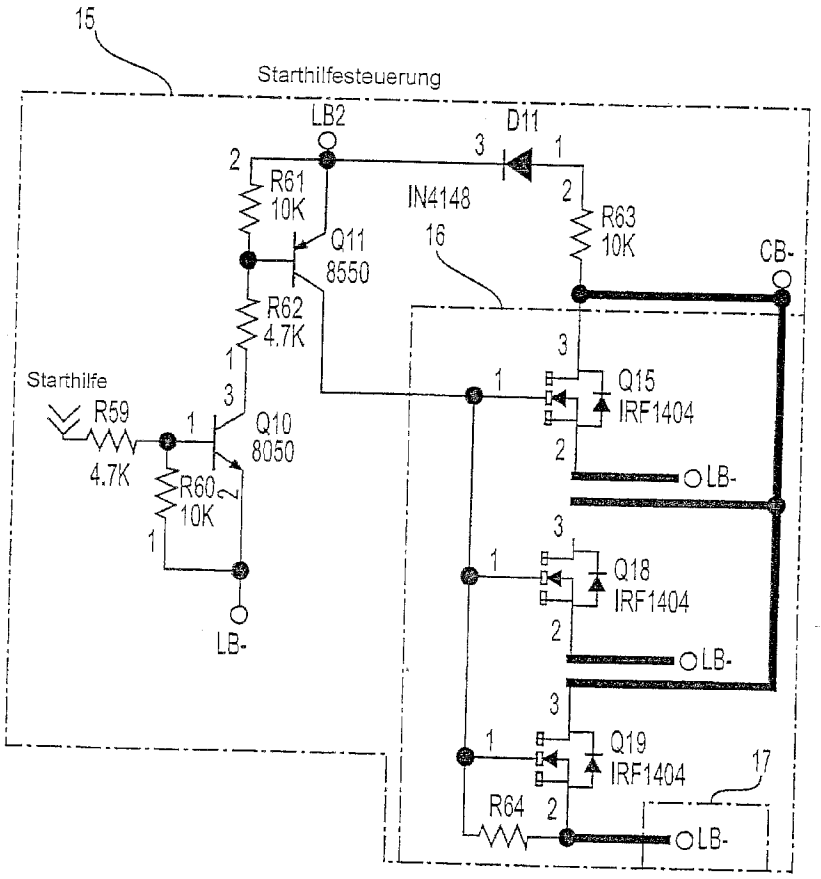
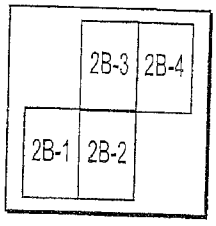

15
Starthilfesteuerung
LB2
D11
IN4148
R61
10K
Q11
8550
R62
4.7K
R63
10K
CB-
16
Starthilfe
R59
4.7K
Q10
8050
R60
10K
LB-
Q15
IRF1404
LB-
Q18
IRF1404
LB-
Q19
IRF1404
17
R64
LB-

FIG. 2B-2


2B-3
2B-4
2B-1
2B-2

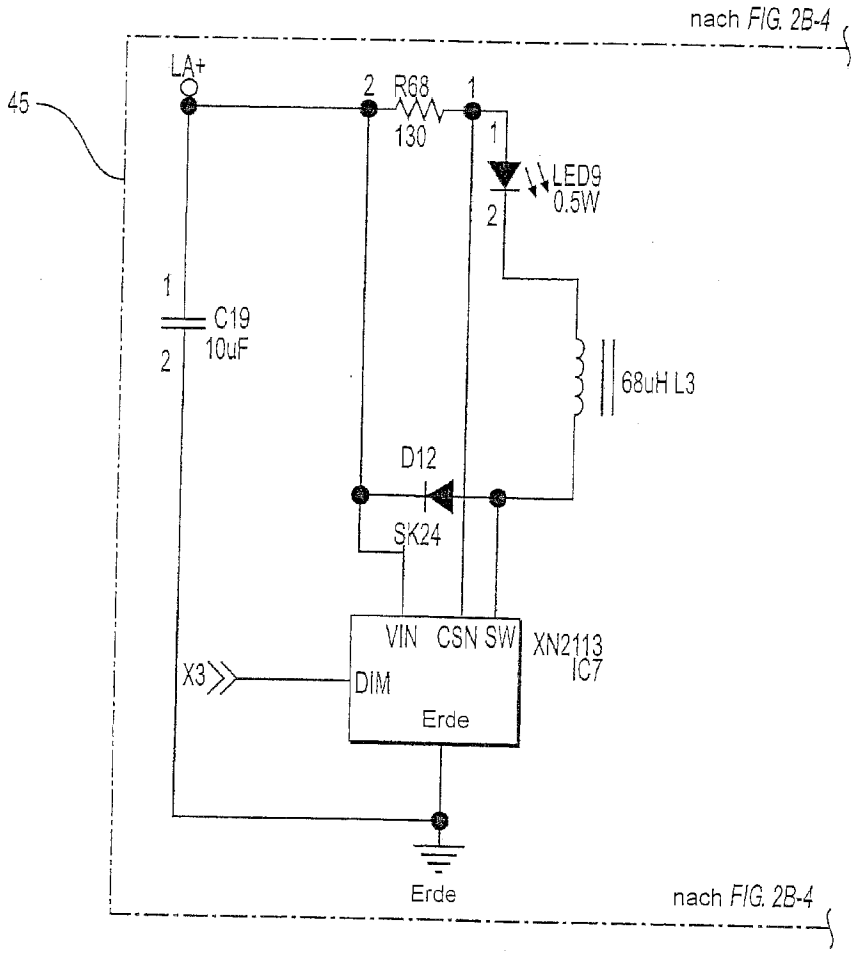
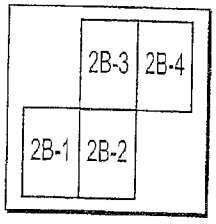

nach FIG. 2B-4
45
LA+
2
R68
130
1
1
LED9
0.5W
2
1
C19
10uF
2
68uH L3
D12
SK24
VIN
CSN
SW
XN2113
IC7
X3
DIM
Erde
Erde
nach FIG. 2B-4

FIG. 2B-3


2B-3
2B-4
2B-1
2B-2

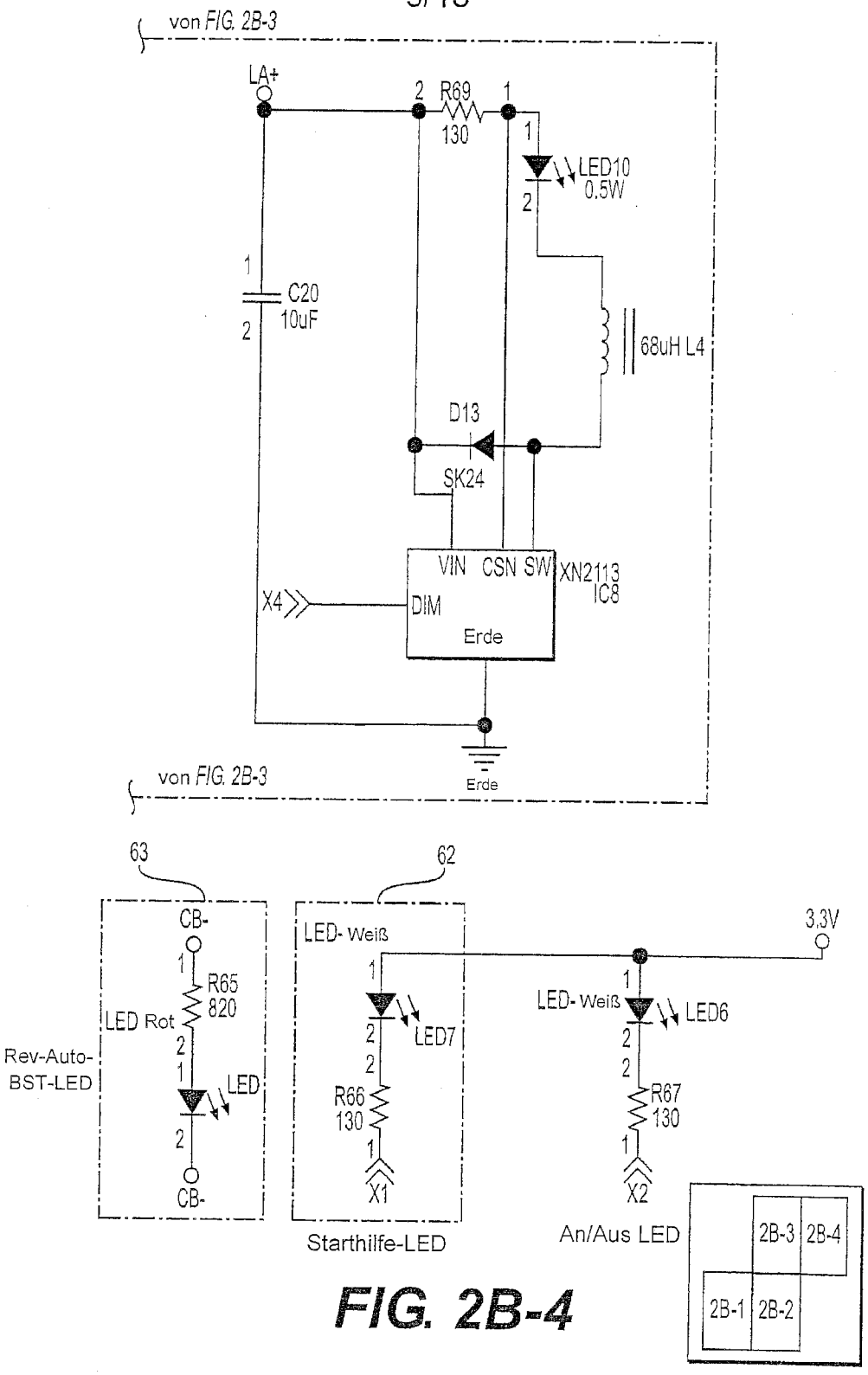

von FIG. 2B-3
LA+
2
R69
130
1
1
LED10
0.5W
2
1
C20
10uF
2
68uH L4
D13
SK24
VIN
CSN
SW
XN2113
IC8
X4
DIM
Erde
von FIG. 2B-3
Erde
63
62
CB-
1
R65
820
LED Rot
2
1
LED
2
CB-
Rev-Auto-
BST-LED
LED- Weiß
1
2
LED7
2
R66
130
1
X1
Starthilfe-LED
3,3V
1
LED- Weiß
LED6
2
2
R67
130
1
X2
An/Aus LED
2B-3
2B-4
2B-1
2B-2

FIG. 2B-4

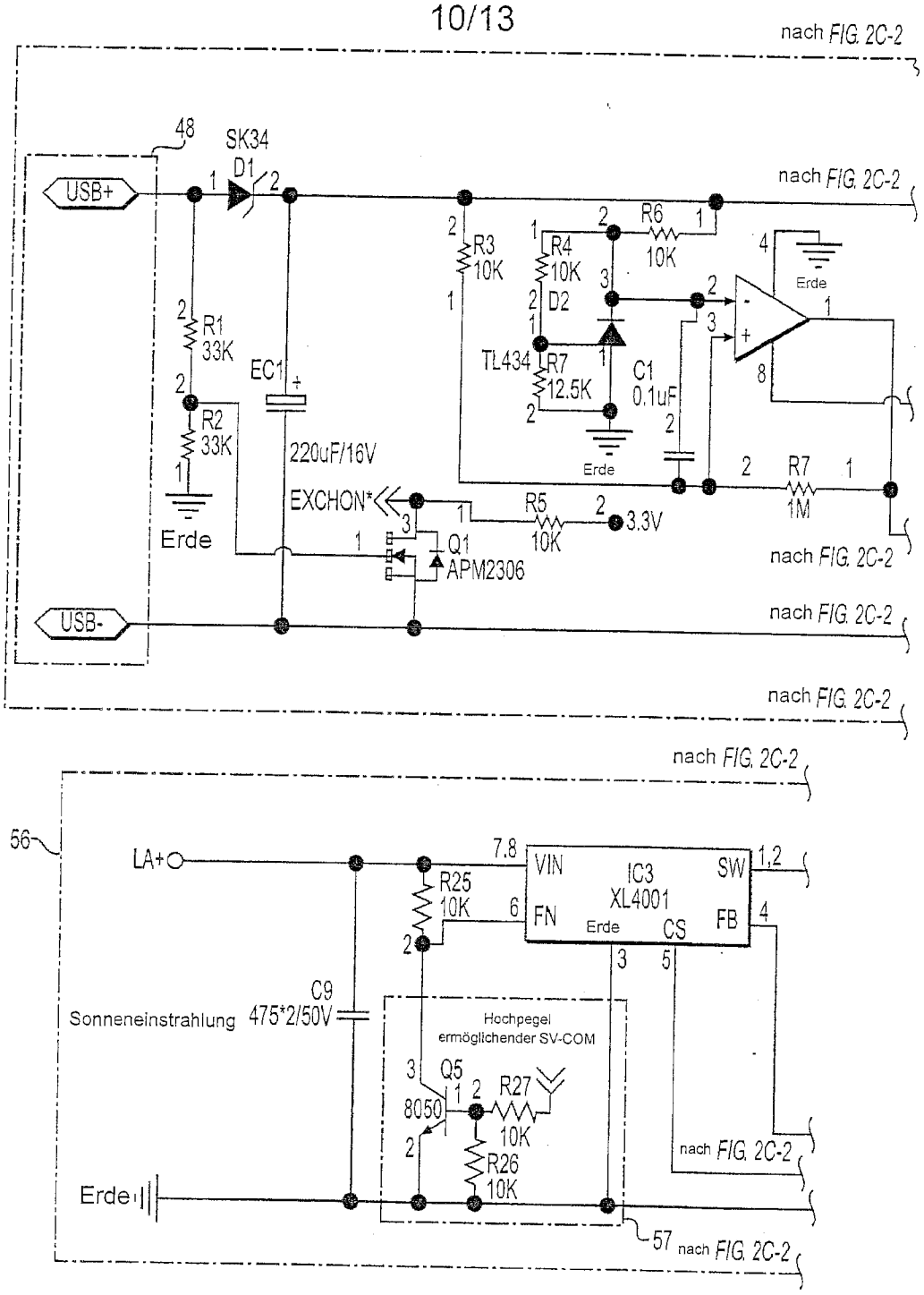
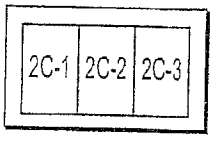

nach FIG. 2C-2
48
SK34
D1
USB+
USB-
R1
33K
R2
33K
Erde
EC1
220uF/16V
EXCHON*
Q1
APM2306
R3
10K
R4
10K
D2
TL434
R7
12.5K
R6
10K
C1
0.1uF
R5
10K
3.3V
R7
1M
56
LA+
R25
10K
IC3
XL4001
VIN
FN
CS
SW
FB
C9
475*2/50V
Sonneneinstrahlung
Hochpegel ermöglichender SV-COM
Q5
8050
R27
10K
R26
10K
57

FIG. 2C-1


2C-1
2C-2
2C-3

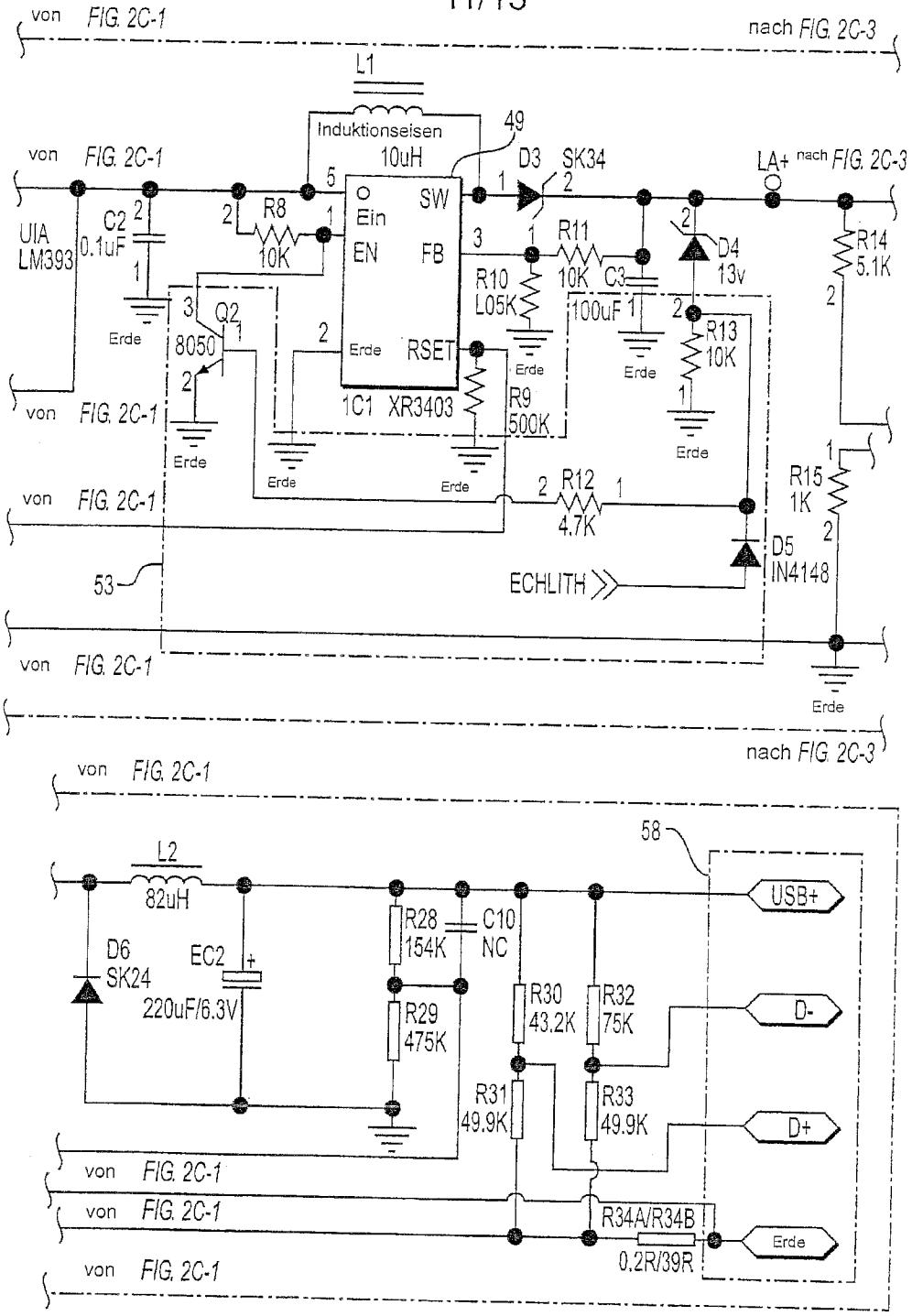
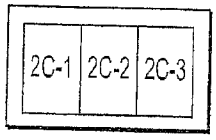
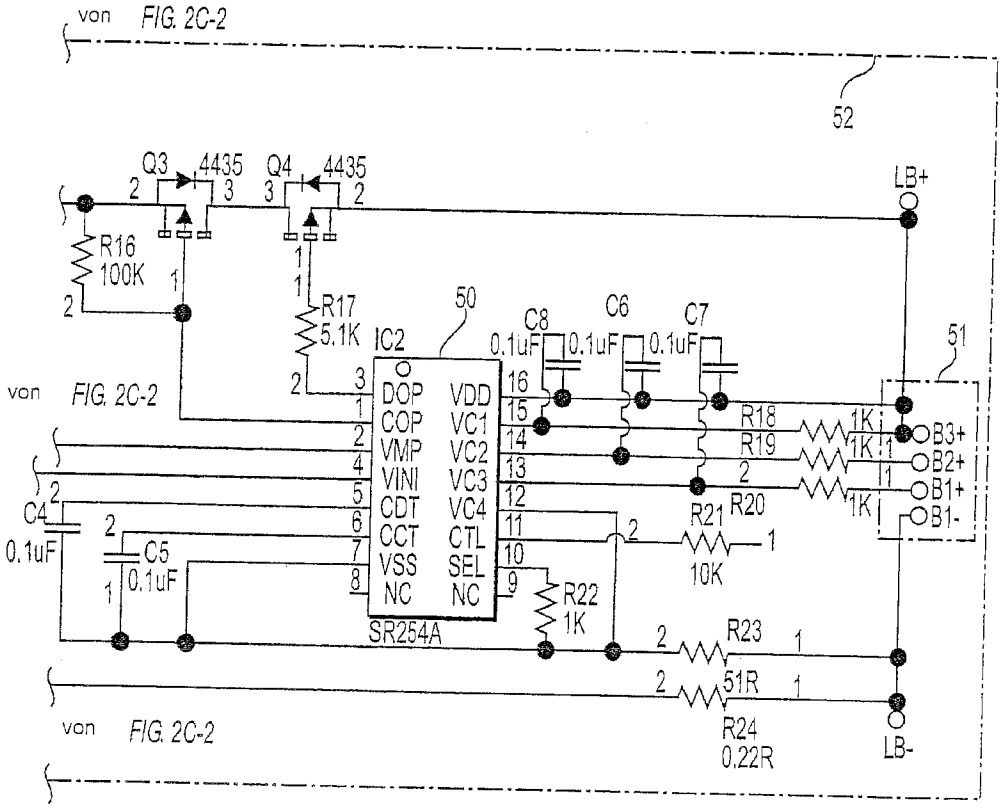

von FIG. 2C-1
nach FIG. 2C-3
L1
Induktionseisen
10uH
49
D3 SK34
LA+
UIA
LM393
C2
0.1uF
R8
10K
SW
Ein
EN
FB
RSET
1C1 XR3403
R10
L05K
R11
10K
C3
100uF
D4
13v
R14
5.1K
R13
10K
Q2
8050
R9
500K
R12
4.7K
R15
1K
D5
IN4148
ECHLITH
53
Erde
L2
82uH
D6
SK24
EC2
220uF/6.3V
R28
154K
C10
NC
R29
475K
R30
43.2K
R32
75K
R31
49.9K
R33
49.9K
58
USB+
D-
D+
R34A/R34B
0.2R/39R

FIG. 2C-2


2C-1
2C-2
2C-3

12/13


von FIG. 2C-2
52
Q3 4435
Q4 4435
LB+
R16 100K
R17 5.1K
IC2
50
C8 0.1uF
C6 0.1uF
C7 0.1uF
51
von FIG. 2C-2
DOP
COP
VMP
VINI
CDT
CCT
VSS
NC
VDD
VC1
VC2
VC3
VC4
CTL
SEL
NC
SR254A
R18 1K
R19 1K
B3+
B2+
B1+
B1-
C4 0.1uF
C5 0.1uF
R20 1K
R21 10K
R22 1K
R23
51R
R24 0.22R
LB-
von FIG. 2C-2

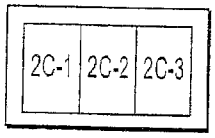

2C-1
2C-2
2C-3

FIG. 2C-3

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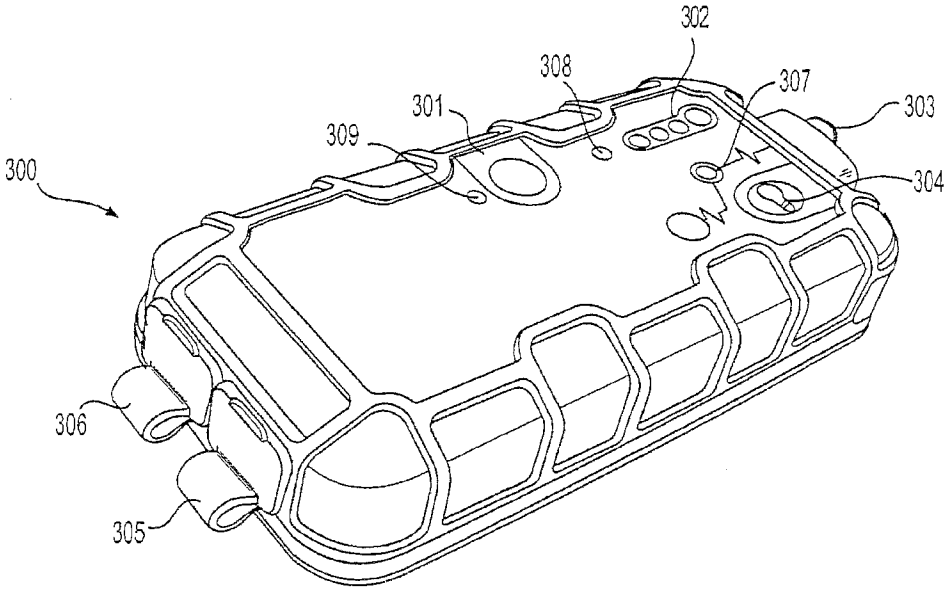


FIG. 3

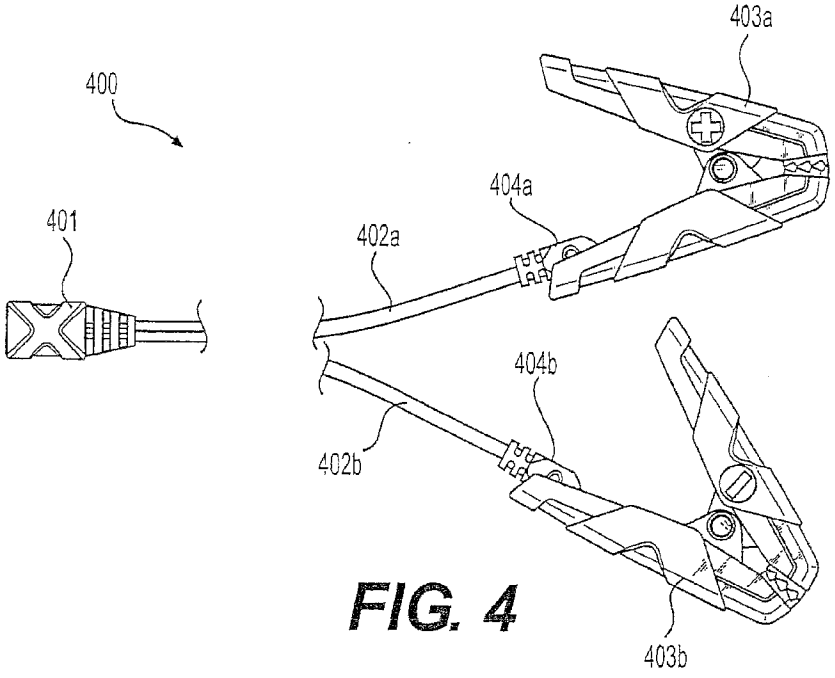


FIG. 4

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

Before the Honorable Clark S. Cheney
Administrative Law Judge

In the Matter of **CERTAIN PORTABLE BATTERY JUMP STARTERS AND COMPONENTS THEREOF**	Investigation No. 337-TA-1256

RESPONDENT SMARTECH PRODUCTS, INC.'S RESPONSE TO THE COMPLAINT UNDER 337 OF THE TARIFF ACT OF 1930, AS AMENDED, AND NOTICE OF INVESTIGATION

Counsel for Respondent Smartech Products, Inc.:

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Pursuant to the United States International Trade Commission's Rule 210.13 and 19 C.F.R. § 210.13, Respondent Smartech Products, Inc. ("Smartech") hereby responds to the Amended Complaint filed by The NOCO Company ("NOCO") on February 3, 2021, and any amendments permitted thereto, and to the Notice of Investigation issued by the United States International Trade Commission ("Commission") on March 17, 2021. As to the Notice of Investigation, Smartech admits that such an investigation exists and that Smartech is named as one of the respondents therein. Smartech otherwise denies the existence of the predicates and requirements for liability under such investigation, and therefore, denies the allegations in the Notice of Investigation to the extent such allegations exist.

As an initial matter, Smartech denies that they have engaged in unfair competition or violated Section 337 of the Tariff Act of 1930, as amended, by importing, selling for importation, or selling within the United States after importation any devices, products, or articles that infringe any valid and enforceable intellectual property rights at issue in this Investigation, including U.S. Patent No. 9,007,015 ("the '015 patent") and U.S. Patent No. 10,604,024 ("the '024 patent;" both patents collectively, the "Asserted Patents").

Because discovery by Smartech has just begun, Smartech has not yet had sufficient time and opportunity to collect and review all of the information that may be relevant to the issues raised in this Response. Smartech therefore reserves the right to amend or supplement its responses, including raising additional defenses, based on any additional facts or developments that become available or that arise after the filing of this Response. Smartech will supplement this Response with the data required by 19 C.F.R. § 210.13(b) when available.

As such, Smartech denies each and every allegation averred in the Complaint that is not expressly admitted below. Any factual allegation admitted below is admitted only as to the specific

admitted facts, and not as to any purported conclusions, characterizations, implications, or speculations that might follow from the admitted facts.

SPECIFIC RESPONSES TO ALLEGATIONS IN THE COMPLAINT

Except as expressly admitted below, Smartech denies each and every allegation set forth in the Complaint:

I. INTRODUCTION

1. Smartech responds that the allegations in paragraph 1 of the Amended Complaint are conclusions of law as to which no response is necessary. To the extent a response is required, Smartech admits that NOCO has filed a Complaint pursuant to Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337 and has requested the Commission to institute an investigation addressing the sale for importation, importation, and/or sale within the United States after importation of certain portable battery jump starters and components thereof. Smartech denies the remaining allegations of paragraph 1.

2. Smartech responds that paragraph 2 of the Amended Complaint contains opinions and legal arguments rather than factual assertions and, therefore, denies the same. Smartech further states that the allegations also include conclusions of law as to which no response is necessary. Smartech admits that it imports the Smartech Accused Products into the United States. Smartech denies the remaining allegations of paragraph 2.

3. To the extent that the allegations of paragraph 3 call for a legal conclusion, no response is required. To the extent that paragraph 3 is deemed to contain factual allegations, Smartech admits that Exhibits 1 and 2 to the Complaint purport to be copies of, respectively, the '015 patent and the '024 patent. Smartech denies the remaining allegations of paragraph 3.

4. Smartech understands that paragraph 4 is not directed to Smartech, and no response from Smartech is needed. Smartech further states that the allegations in paragraph 4 of the

Amended Complaint are conclusions of law to which no response is necessary. To the extent that a response is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 4 and, therefore, denies those allegations and averments.

5. Smartech admits that NOCO accuses Respondents of infringing certain claims of the Asserted Patents but expressly denies that Smartech infringes any valid and enforceable claim. Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in paragraph 5 with respect to other Respondents and, therefore, denies those allegations and averments. Smartech denies the remaining allegations of paragraph 5.

6. Smartech responds that the allegations in paragraph 6 of the Amended Complaint contain legal opinions and conclusions of law to which no response is necessary. To the extent a response is required, Smartech admits that the NOCO describes the Accused Products as "portable, battery-powered devices that are used to jump-start batteries such as those in automobiles, trucks, and other vehicles, and related components, namely battery cables and clamps." Smartech denies the remaining allegations of paragraph 6.

7. Paragraph 7 calls for a legal conclusion, and no response is required. To the extent a response is required, Smartech denies the allegations of paragraph 7.

8. Smartech admits that NOCO seeks certain remedies in this Investigation but denies that NOCO is entitled to any of those remedies. Smartech denies the remaining allegations of paragraph 8.

9. Smartech admits that NOCO seeks the relief described in paragraph 9 but denies that NOCO is entitled to any such relief. Smartech denies the remaining allegations of paragraph 9.

II. THE PARTIES

A. Complainant NOCO

10. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 10 and therefore denies those allegations.

11. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 11 and therefore denies those allegations.

12. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 12 and therefore denies those allegations.

13. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 13 and therefore denies those allegations.

14. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 14 and therefore denies those allegations.

B. Proposed Respondents

15. Smartech admits that this section of the Complaint purports to identify the Proposed Respondents. Smartech also admits that the Complaint contains a Section VI and attaches a Declaration of Anne Hurst. The remaining allegations of paragraph 15 with respect to Smartech call for a legal conclusion, and no response is required; to the extent a response is required, Smartech denies the allegations. Smartech understands that paragraph 15 also contains allegations not directed to Smartech, and no response from Smartech is needed. To the extent that a response is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 15 and, therefore, denies those allegations and averments.

1. Carku Respondents

a) Advance Auto Parts, Inc.

16. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 16 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 16 and, therefore, denies those allegations and averments.

17. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 17 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 17 and, therefore, denies those allegations and averments.

b) Antigravity Batteries LLC

18. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 18 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 18 and, therefore, denies those allegations and averments.

19. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 19 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 19 and, therefore, denies those allegations and averments

c) Aukey Technology Co., Ltd.

20. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 20 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 20 and, therefore, denies those allegations and averments.

21. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 21 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 21 and, therefore, denies those allegations and averments.

d) Autogen Technology Co., Ltd.

22. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 22 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 22 and, therefore, denies those allegations and averments.

23. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 23 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 23 and, therefore, denies those allegations and averments.

e) Gooloo Technologies LLC

24. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 24 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 24 and, therefore, denies those allegations and averments

25. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 25 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 25 and, therefore, denies those allegations and averments.

f) Guangzhou Unique Electronics Co., Ltd

26. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 26 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 26 and, therefore, denies those allegations and averments.

27. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 27 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 27 and, therefore, denies those allegations and averments.

g) Horizon Tool, Inc.

28. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 28 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 28 and, therefore, denies those allegations and averments.

29. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 29 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 29 and, therefore, denies those allegations and averments.

h) Huizhou Grepro E-Commerce

30. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 30 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 30 and, therefore, denies those allegations and averments.

31. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 31 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 31 and, therefore, denies those allegations and averments.

i) Medcursor, Inc.

32. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 32 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 32 and, therefore, denies those allegations and averments.

33. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 33 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 33 and, therefore, denies those allegations and averments.

j) Nekteck, Inc.

34. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 34 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 34 and, therefore, denies those allegations and averments.

35. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 35 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 35 and, therefore, denies those allegations and averments.

k) PowerMax Battery (U.S.A.), Inc.

36. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 36 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 36 and, therefore, denies those allegations and averments.

37. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 37 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 37 and, therefore, denies those allegations and averments.

l) Prime Global Products, Inc.

38. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 38 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 38 and, therefore, denies those allegations and averments.

39. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 39 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 39 and, therefore, denies those allegations and averments.

m) Shenzhen Carku Technology Co., Ltd.

40. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 40 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 40 and, therefore, denies those allegations and averments

41. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 41 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 41 and, therefore, denies those allegations and averments.

n) Shenzhen Moock Technology Co., Ltd.

42. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 42 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 42 and, therefore, denies those allegations and averments.

43. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 43 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 43 and, therefore, denies those allegations and averments.

o) Shenzhen Take Tools Co., Ltd.

44. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 44 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 44 and, therefore, denies those allegations and averments.

45. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 45 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 45 and, therefore, denies those allegations and averments

p) Sictec Instruments Co., Ltd.

46. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 46 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 46 and, therefore, denies those allegations and averments.

47. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 47 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 47 and, therefore, denies those allegations and averments.

q) Walmart Inc.

48. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 48 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 48 and, therefore, denies those allegations and averments.

49. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 49 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 49 and, therefore, denies those allegations and averments.

r) 70mai Co., Ltd.

50. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 50 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 50 and, therefore, denies those allegations and averments.

51. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 51 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 51 and, therefore, denies those allegations and averments.

2. Boltpower Respondents

a) Anker Technology (UK) Ltd.

52. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 52 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 52 and, therefore, denies those allegations and averments.

53. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 53 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 53 and, therefore, denies those allegations and averments.

b) Arteck Electronic Co., Ltd.

54. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 54 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 54 and, therefore, denies those allegations and averments.

55. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 55 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 55 and, therefore, denies those allegations and averments.

c) Best Parts, Inc.

56. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 56 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 56 and, therefore, denies those allegations and averments.

57. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 57 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 57 and, therefore, denies those allegations and averments.

d) Circus Link, Inc.

58. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 58 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 58 and, therefore, denies those allegations and averments.

59. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 59 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 59 and, therefore, denies those allegations and averments.

e) Deltran USA, LLC

60. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 60 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 60 and, therefore, denies those allegations and averments.

61. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 61 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 61 and, therefore, denies those allegations and averments.

f) FlyLink Tech Technologies Co., Ltd.

62. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 62 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 62 and, therefore, denies those allegations and averments.

63. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 63 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 63 and, therefore, denies those allegations and averments.

g) Fconegy Co., Ltd.

64. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 64 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 64 and, therefore, denies those allegations and averments.

65. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 65 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 65 and, therefore, denies those allegations and averments.

h) Guangdong Boltpower Energy Co., Ltd.

66. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 66 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 66 and, therefore, denies those allegations and averments.

67. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 67 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 67 and, therefore, denies those allegations and averments.

i) Guangzhou Autolion Electric Technology Co., Ltd.

68. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 68 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 68 and, therefore, denies those allegations and averments.

69. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 69 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 69 and, therefore, denies those allegations and averments.

j) Integrated Supply Network, LLC

70. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 70 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 70 and, therefore, denies those allegations and averments.

71. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 71 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 71 and, therefore, denies those allegations and averments.

k) K-Tool International

72. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 72 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 72 and, therefore, denies those allegations and averments.

73. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 73 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 73 and, therefore, denies those allegations and averments

l) Lowe's Companies, Inc.

74. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 74 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 74 and, therefore, denies those allegations and averments.

75. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 75 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 75 and, therefore, denies those allegations and averments.

m) Matco Tools Corporation

76. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 76 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 76 and, therefore, denies those allegations and averments.

77. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 77 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 77 and, therefore, denies those allegations and averments.

n) MonoPrice, Inc.

78. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 78 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 78 and, therefore, denies those allegations and averments.

79. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 79 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 79 and, therefore, denies those allegations and averments.

o) National Automotive Parts Association, LLC

80. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 80 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 80 and, therefore, denies those allegations and averments.

81. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 81 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 81 and, therefore, denies those allegations and averments.

p) O'Reilly Automotive, Inc.

82. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 82 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 82 and, therefore, denies those allegations and averments.

83. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 83 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 83 and, therefore, denies those allegations and averments.

q) Pep Boys

84. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 84 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 84 and, therefore, denies those allegations and averments.

85. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 85 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 85 and, therefore, denies those allegations and averments.

r) Schumacher Power Technology Ltd.

86. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 86 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 86 and, therefore, denies those allegations and averments

87. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 87 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 87 and, therefore, denies those allegations and averments.

87a. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 87a is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 87a and, therefore, denies those allegations and averments.

87b. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 87b is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 87 and, therefore, denies those allegations and averments.

s) Shenzhen Chic Electrics Co., Ltd.

88. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 88 is required,

Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 88 and, therefore, denies those allegations and averments.

89. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 89 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 89 and, therefore, denies those allegations and averments.

t) Shenzhen Dingjiang Technology Co., Ltd. LLLC

90. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 90 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 90 and, therefore, denies those allegations and averments.

91. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 91 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 91 and, therefore, denies those allegations and averments.

u) Shenzhen Lianfatong Technology Co., Ltd.

92. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 92 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 92 and, therefore, denies those allegations and averments.

93. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 93 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 93 and, therefore, denies those allegations and averments.

v) Shenzhen Li Feng Maoyiyouxiangongsi

94. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 94 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 94 and, therefore, denies those allegations and averments.

95. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 95 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 95 and, therefore, denies those allegations and averments.

w) Shenzhen Mediatek Tong Technology Co., Ltd.

96. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 96 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 96 and, therefore, denies those allegations and averments.

97. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 97 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 97 and, therefore, denies those allegations and averments.

x) Shenzhen Topdon Technology Co., Ltd.

98. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 98 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 98 and, therefore, denies those allegations and averments.

99. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 99 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 99 and, therefore, denies those allegations and averments.

y) Shenzhen Valuelink E-Commerce Co., Ltd

100. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 100 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 100 and, therefore, denies those allegations and averments.

101. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 101 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 101 and, therefore, denies those allegations and averments.

z) Smart Well Enterprise Limited

102. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 102 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 102 and, therefore, denies those allegations and averments.

103. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 103 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 103 and, therefore, denies those allegations and averments.

aa) Tii Trading Inc.

104. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 104 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 104 and, therefore, denies those allegations and averments.

105. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 105 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 105 and, therefore, denies those allegations and averments.

bb) Zhejiang Qingyou Electronic Commerce Co., Ltd.

106. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 106 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 106 and, therefore, denies those allegations and averments.

107. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 107 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 107 and, therefore, denies those allegations and averments.

3. Smartech Respondents

a) Smartech Products, Inc.

108. Smartech admits that it has a place of business located at 8700 Larkin Road, Suite B, Savage, Maryland 20763. The remaining allegations of paragraph 108 call for a legal conclusion, and no response is required; to the extent a response is required, Smartech denies the allegations.

109. Smartech admits that it imports jump starters into the United States and/or sells them after the importation, but denies that any of those infringe the asserted claims of the Asserted Patents. Smartech denies the remaining allegations of paragraph 109.

4. Weego Respondents

a) Shenzhen Jieruijia Technology Co., Ltd.

110. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 110 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 110 and, therefore, denies those allegations and averments.

111. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 111 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 111 and, therefore, denies those allegations and averments.

b) Paris Corporation

112. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 112 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 112 and, therefore, denies those allegations and averments.

113. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 113 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 113 and, therefore, denies those allegations and averments.

5. WinPlus Respondents

a) Shenzhen Winplus Technology Co., Ltd.

114. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 114 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 114 and, therefore, denies those allegations and averments.

115. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 115 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 115 and, therefore, denies those allegations and averments.

b) Winplus North America, Inc.

116. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 116 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 116 and, therefore, denies those allegations and averments.

117. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 117 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 117 and, therefore, denies those allegations and averments.

6. Great Neck Respondents

a) AutoZone, Inc.

118. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 118 is required,

Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 118 and, therefore, denies those allegations and averments.

119. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 119 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 119 and, therefore, denies those allegations and averments.

b) Great Neck Global, Inc. & Great Neck Saw Manufacturers, Inc.

120. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 120 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 120 and, therefore, denies those allegations and averments.

121. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 121 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 121 and, therefore, denies those allegations and averments.

122. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 122 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 122 and, therefore, denies those allegations and averments.

7. ThiEye Respondents

a) Dongguan Hangchebao Energy Technology Co., Ltd.

123. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 123 is required,

Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 123 and, therefore, denies those allegations and averments.

124. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 124 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 124 and, therefore, denies those allegations and averments.

b) ThiEye Technologies Co., Ltd.

125. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 125 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 125 and, therefore, denies those allegations and averments.

126. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 126 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 126 and, therefore, denies those allegations and averments.

8. Energen/ Performance Tool Respondents

a) Best Buy Co., Inc.

127. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 127 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 127 and, therefore, denies those allegations and averments.

128. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 128 is required,

Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 128 and, therefore, denies those allegations and averments.

b) Chao Fung Trading Co. Ltd.

129. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 129 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 129 and, therefore, denies those allegations and averments.

130. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 130 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 131 and, therefore, denies those allegations and averments.

c) Energen, Inc.

131. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 131 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 131 and, therefore, denies those allegations and averments.

132. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 132 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 132 and, therefore, denies those allegations and averments.

d) Wilmar Corporation

133. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 133 is required,

Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 133 and, therefore, denies those allegations and averments.

134. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 134 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 134 and, therefore, denies those allegations and averments.

134a. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134a is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 134a and, therefore, denies those allegations and averments.

134b. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134b is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 134b and, therefore, denies those allegations and averments.

134c. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134c is required, Smartech lacks knowledge or information sufficient to form a belief regarding the

allegations and averments contained in subparagraph 134c and, therefore, denies those allegations and averments.

134d. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134d is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 134d and, therefore, denies those allegations and averments.

134e. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134e is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 134e and, therefore, denies those allegations and averments.

134f. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134f is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 134f and, therefore, denies those allegations and averments.

134g. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134g is required,

Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 134g and, therefore, denies those allegations and averments.

134h. Smartech understands that this subparagraph, inserted in NOCO's Sixth Supplement to the Amended Complaint, is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to subparagraph 134h is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in subparagraph 134h and, therefore, denies those allegations and averments.

III. THE PRODUCTS AT ISSUE

135. The allegations of paragraph 135 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 135 of the Complaint and therefore denies those allegations.

136. The allegations of paragraph 136 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 136 of the Complaint and therefore denies those allegations.

137. The allegations of paragraph 137 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 137 of the Complaint and therefore denies those allegations.

138. The allegations of paragraph 138 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks

sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 138 of the Complaint and therefore denies those allegations.

A. Complainant's Jump Starters

139. Smartech admits that paragraph 139 purports to include what appears to be a photograph of NOCO Boost®. Smartech further admits that paragraph 139 purports to include what appears to be a link to a YouTube video related to NOCO Boost®. Smartech lacks sufficient knowledge or information sufficient to form a belief regarding the remaining allegations and averments contained in Paragraph 139 and, therefore, denies those allegations and averments.

140. Smartech admits Exhibit 8 includes jump starter products but it lacks sufficient knowledge and information to form a belief as to the content of the chart and the allegations contained in paragraph 140 and therefore denies the same.

141. Smartech admits Exhibit 8 includes jump starter products but Smartech lacks sufficient knowledge and information to form a belief as to the content of the charts and the truth of the allegations contained in paragraph 141 and therefore denies the same.

142. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 142 and therefore denies those allegations.

B. Respondents' Jump Starters

143. Smartech admits that it imports portable battery jump starters into the United States. The remaining allegations of paragraph 143 directed to Smartech call for a legal conclusion, and no response is required; to the extent a response is required, Smartech denies the allegations. Smartech understands that paragraph 143 also contains allegations not directed to Smartech, and no response from Smartech is needed. To the extent that a response is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 143 and, therefore, denies those allegations and averments.

144. The allegations of paragraph 144 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 144 of the Complaint and therefore denies those allegations.

145. Smartech admits that it sells jump starters on https://smartechproduct.com/product-category/jump-starters/. The remaining allegations of paragraph 145 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the remaining allegations contained in paragraph 145 of the Complaint and therefore denies those allegations.

IV. THE ASSERTED PATENTS

146. Paragraph 146 calls for a legal conclusion, and no response is required. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 146 of the Complaint and therefore denies those allegations.

147. Smartech responds that paragraph 147 of the Amended Complaint is not an allegation so no response is required. To the extent a response is required, Smartech admits that the Complaint contains sections titled "Identification of the Patent and Ownership," "Non-Technical Description of the Patent," "Foreign Counterparts of the Patent," and "Licensees to the Patent." Smartech lacks knowledge or information sufficient to form a belief regarding the remaining allegations contained in Paragraph 147 and, therefore, denies the same.

A. U.S. Patent No. 9,007,015

1. Identification of the Patent and Ownership

148. Smartech admits that the first page of the '015 patent reflects the title "Portable Vehicle Battery Jump Start Apparatus with Safety Protection." Smartech further admits that the first page of the '015 patent reflects the issue date of April 15, 2015 and names Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Smartech also admits that the first page of the '015 patent states that the patent issued from U.S. Patent Application No. 14/325,938 filed on July 8, 2014 and that the '015 patent is a continuation of Application No. PCT/US2014/045343, filed on July 3, 2014. Smartech further admits that the Amended Complaint is accompanied by Exhibit 1, which purports to be a certified copy of the '015 patent. The remaining allegations of paragraph 148 call for a legal conclusion, and no response is required; to the extent a response is required, Smartech denies the allegations.

149. Smartech admits that what appears to be a certified copy of the prosecution history of the '015 patent and the references cited therein accompany the Complaint as Appendices A1 and A2. Smartech denies the remaining allegations of paragraph 149.

150. Smartech admits that the Amended Complaint is accompanied by Exhibit 6, which purports to be the assignment of the '015 patent. Paragraph 150 calls for a legal conclusion, and no response is required. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 150 of the Complaint and therefore denies those allegations.

2. Non-Technical Description of the Patent

151. Paragraph 151 calls for a legal conclusion, and no response is required. Further, the allegations of paragraph 151 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks sufficient knowledge and

information to form a belief as to the truth of the allegations contained in paragraph 151 of the Complaint and therefore denies those allegations.

152. Smartech admits that the '015 patent contains 23 claims. Smartech also admits that the NOCO Company purports to assert claims 1, 4, 11, 14, 18, 19 and 21. Smartech denies the remaining allegations of paragraph 152.

3. Foreign Counterparts of the Patent

153. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 153 of the Complaint and therefore denies those allegations.

154. Paragraph 154 calls for a legal conclusion, and no response is required. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 154 of the Complaint and therefore denies those allegations.

4. Licensees to the Patent

155. Smartech admits that the Amended Complainant attached Confidential Ex. 5C which appears to be a list of licensees. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 155 of the Complaint and therefore denies those allegations.

B. U.S. Patent No. 10,604,024

1. Identification of the Patent and Ownership

156. Smartech admits that the first page of the '024 patent reflects the title "Portable Vehicle Battery Jump Start Apparatus with Safety Protection." Smartech further admits that the first page of the '015 patent reflects the issue date of March 31, 2020 and names Jonathan L. Nook, William K. Nook, James R. Stanfield, and Derek M. Underhill as the inventors. Smartech also

admits that the first page of the '015 patent states that the patent issued from U.S. Patent Application No. 15/691,884 filed on Aug. 31, 2017 and that the '015 patent is a continuation of Application No. 14/619,655, filed February 11, 2015, now U.S. Patent No. 9,770,992, which claims priority to PCT/US2014/045434, filed July 3, 2014. Smartech further admits that the Amended Complaint is accompanied by Exhibit 2, which purports to be a certified copy of the '024 patent. The remaining allegations of paragraph 156 call for a legal conclusion, and no response is required; to the extent a response is required, Smartech denies the allegations.

157. Smartech admits that what appears to be a certified copy of the prosecution history of the '024 patent and the references cited therein accompany the Complaint as Appendices B1 and B2. Smartech denies the remaining allegations of paragraph 157.

158. Smartech admits that the Amended Complaint is accompanied by Exhibit 7, which purports to be the assignment of the '024 patent. Paragraph 158 calls for a legal conclusion, and no response is required. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 158 of the Complaint and therefore denies those allegations.

2. Non-Technical Description of the Patent

159. Paragraph 159 calls for a legal conclusion, and no response is required. Further, the allegations of paragraph 159 are generalized, vague, and ambiguous and therefore cannot be admitted or denied. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 159 of the Complaint and therefore denies those allegations.

160. Smartech admits that the '024 patent on its face contains 30 claims. Smartech also admits that NOCO purports to assert claims 1, 4, 5, 6, 16, 19, 23, 24, 26, 29, 30. Smartech denies the remaining allegations of paragraph 160.

3. Foreign Counterparts of the Patent

161. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 161 of the Complaint and therefore denies those allegations.

4. Licensees to the Patent

162. Smartech admits that Amended Complainant attached Confidential Ex. 5C which appears to be a list of licensees. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 162 of the Complaint and therefore denies those allegations.

V. THE ASSERTED TRADEMARKS

A. U.S. Trademark Reg. No. 4,811,656

163. Smartech admits that what appears to be the Certificate of Registration of the trademark registered under Reg. No. 4,811,656 for ULTRASAFE mark is attached as Exhibit 3 to the Complaint. Smartech also admits that the registration indicates the issue date of September 15, 2015 on its face. The remaining allegations of paragraph 163 calls for a legal conclusion, and no response is required. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 163 of the Complaint and therefore denies those allegations.

164. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 164 of the Complaint and therefore denies those allegations.

B. U.S. Trademark Reg. No. 4,811,74

165. Smartech admits that what appears to be the Certificate of Registration of the trademark registered under Reg. No. 4,811,749 for SAFELY JUMP START A DEAD BATTER IN SECONDS mark is attached as Exhibit 4 to the Complaint. Smartech also admits that the registration indicates the issue date of September 15, 2015 on its face. The remaining allegations of paragraph 165 calls for a legal conclusion, and no response is required. To the extent a response is required, Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 165 of the Complaint and therefore denies those allegations.

166. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 166 of the Complaint and therefore denies those allegations.

VI. UNFAIR ACTS OF THE PROPOSED RESPONDENTS

A. Infringement of the Asserted Patents

167. Denied. Smartech further understands that several allegations in this Paragraph are not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 167 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 167 and, therefore, denies those allegations and averments.

168. Denied. Smartech further understands that several allegations in this Paragraph are not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 168 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 168 and, therefore, denies those allegations and averments.

169. Smartech admits that the Accused Products appear to be divided into groups based on some criteria. Smartech lacks sufficient knowledge and information to form a belief as to the truth of the allegations contained in paragraph 169 of the Complaint and therefore denies those allegations.

1. Claim Chart 01- Carku Accused Products

a) Carku Design

170. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 170 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 170 and, therefore, denies those allegations and averments.

b) Infringement of the '015 Patent

171. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 171 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 171 and, therefore, denies those allegations and averments.

172. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 172 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 172 and, therefore, denies those allegations and averments.

c) Infringement of the '024 Patent

173. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 173 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 173 and, therefore, denies those allegations and averments.

174. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 174 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 174 and, therefore, denies those allegations and averments.

2. Claim Chart 02- Boltpower Accused Products

a) Boltpower Design

175. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 175 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 175 and, therefore, denies those allegations and averments.

b) Infringement of the '015 Patent

176. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 176 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 176 and, therefore, denies those allegations and averments.

177. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 177 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 177 and, therefore, denies those allegations and averments.

c) Infringement of the '024 Patent

178. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 178 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 178 and, therefore, denies those allegations and averments.

179. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 179 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 179 and, therefore, denies those allegations and averments.

3. Claim Chart 03- Smartech Accused Products

a) Smartech Design

180. Smartech admits that it offers jump starters including SMARTECH JS-10000. Smartech denies the remaining allegations of paragraph 180.

b) Infringement of the '015 Patent

181. Denied.

182. Smartech admits that Exhibit 113 purports to be a claim chart titled "Claim Chart - Smartech." Smartech denies the remaining allegations of paragraph 182.

c) Infringement of the '024 Patent

183. Denied.

184. Smartech admits that Exhibit 113 purports to be a claim chart titled "Claim Chart - Smartech." Smartech denies the remaining allegations of paragraph 182.

4. Claim Chart 04- Weego Accused Products

a) Weego Design

185. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 185 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 185 and, therefore, denies those allegations and averments.

b) Infringement of the '015 Patent

186. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 186 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 186 and, therefore, denies those allegations and averments.

187. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 187 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 187 and, therefore, denies those allegations and averments.

c) Infringement of the '024 Patent

188. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 188 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 188 and, therefore, denies those allegations and averments.

189. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 189 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 189 and, therefore, denies those allegations and averments.

5. Claim Chart 05- Winplus Accused Products

a) Winplus Design

190. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 190 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 190 and, therefore, denies those allegations and averments.

b) Infringement of the '015 Patent

191. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 191 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 191 and, therefore, denies those allegations and averments.

192. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 192 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 192 and, therefore, denies those allegations and averments.

c) Infringement of the '024 Patent

193. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 193 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 193 and, therefore, denies those allegations and averments.

194. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 194 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 194 and, therefore, denies those allegations and averments.

6. Claim Chart 06- Great Neck Accused Products

a) Great Neck Design

195. Smartech understands that this Paragraph is not directed to Smartech, and no response from Smartech is needed. To the extent that a response to Paragraph 195 is required, Smartech lacks knowledge or information sufficient to form a belief regarding the allegations and averments contained in Paragraph 195 and, therefore, denies those allegations and averments.